SOUTHWEST COASTAL LOUISIANA
REVISED INTEGRATED DRAFT FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX A
Annex A

Clean Water Act Section 401 Water Quality Certification

Clean Water Act Section 404(b)(1) Evaluation

RESERVED FOR CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION

Sections of this evaluation dealing with the physical and chemical characteristics of the wetlands are addressed by ED-HM, to whom funds are given for their input. Sections dealing with biological characteristics are addressed by PDN.

SECTION 404(b)(1) EVALUATION

Southwest Coastal Louisiana Study
Calcasieu, Cameron, and Vermilion Parishes, Louisiana

I. Project Description

a. Location.

The study area is located in southwest Louisiana and includes all of Calcasieu, Cameron, and Vermilion Parishes, Louisiana. Cameron Parish is located in the southwest corner of Louisiana. The southern boundary of the parish is the Gulf of Mexico. Eighty-two percent of Cameron Parish is coastal marshes. Geographically, it is one of the largest parishes in Louisiana. The parish is chiefly rural and the largest communities are Cameron and Hackberry. Cameron is located along LA-82, while Hackberry is located along LA-27. Other smaller communities include Creole, Johnsons Bayou, and Holly Beach.

Calcasieu Parish is located due north of Cameron Parish. The town of Lake Charles is the parish seat, which is the largest urban area in the study area. Only a small portion of the parish is located in the coastal zone.

Vermilion Parish is located to the east of Cameron Parish. The southern boundary of the parish is the Gulf of Mexico. Large expanses of Vermilion Parish are open water (lakes, bays, and streams). Approximately 50 percent of the land is coastal marshes. The parish is chiefly rural and the town of Abbeville is the parish seat as well as the largest urban area in the parish. Other communities include Delcambre, Kaplan, and Gueydan, which are all located along LA Hwy 14 in the northern part of the study area. Pecan Island and Forked Island are smaller communities both located along LA Hwy 82 in lower Vermilion Parish. Located along LA Hwy 333, Intracoastal City is the nearest access to Vermilion Bay and the Gulf of Mexico in this region and supports the area's oil and shrimp industries.

b. General Description.

The National Ecosystem Restoration (NER) tentatively selected plan (TSP) is Small Integrated Restoration, a comprehensive ecosystem restoration plan addressing land loss problems and ecosystem degradation. The TSP is cost effective, and is the least cost comprehensive best buy plan. The NER TSP will minimize land loss; enhance plant productivity by reducing major stressors; and will reinforce and protect critical landscape features. Details of the NER TSP are below and in attached Figures 1 through 3.

- A total of 50 ecosystem restoration features
    - 9 Marsh Creation features
    - 35 Chenier reforestation features
    - 5 shoreline protection features
    - 1 hydrologic / salinity control feature (programmatic)

See Fact Sheets (Appendix A) and Table 2-18a-d for feature details such as construction schedule, construction equipment, and quantities and types of fill to be placed in wetlands. The proposed action itself consists of measures to minimize the adverse effects of storm water erosion and thus requires no separate measures or controls for compliance with CWA Section 402(p) and LAC 33:IX.2341.B.14.j. The 35 chenier reforestation features do not include placement of fill material in waters of the US.

c. Authority and Purpose.

Study Authority

An investigation for additional hurricane and storm damage risk reduction and related purposes was authorized by a Resolution of the Committee on Transportation and Infrastructure, U.S. House of Representatives, Docket 2747, on December 7, 2005, which included consideration of a plan for an armored 12-foot levee along the Gulf Intracoastal Waterway (GIWW) across Calcasieu, Cameron, and Vermilion Parishes.

CEMVN initiated that Section 905(b) reconnaissance study in April 2006. NED alternatives to mitigate for hurricane-induced damages within Calcasieu, Cameron, and Vermilion Parishes were formulated through a series of planning meetings with the State of Louisiana, local parishes, and other stakeholders. Structural, nonstructural, and coastal restoration measures were considered; however, the economic analysis focused on NED benefits only. The 905(b) reconnaissance study found sufficient Federal interest to conduct a feasibility study and was approved to advance to the feasibility phase in 2007.

The investigation of large scale ecosystem restoration concepts, including the Chenier Plain Freshwater Management and Allocation Reassessment Study (Chenier Plain Study), was recommended in the January 31, 2005 Chief's Report for the LCA, Ecosystem Restoration program. The Chenier Plain Study was one of six large-scale restoration concepts that were purported to have the ability to "significantly restore environmental conditions that existed prior to large-scale alteration of the natural ecosystem" upon construction. The LCA program was authorized in Title VII of WRDA 2007. Guidance provided by the Director of Civil Works on December 19, 2008 states that "*the coastal restoration components proposed as part of the LCA Chenier Plain study will be evaluated as part of the Southwest Coastal Louisiana feasibility study".*

A Feasibility Cost Share Agreement between USACE and the CPRAB as the non-Federal Sponsor was executed on January 14, 2009 for the study and analysis of the NED and NER study alternatives.

Study Purpose
The study purpose is to evaluate coastal storm flood damages and coastal ecosystem degradation in Cameron, Calcasieu, and Vermilion parishes in Louisiana. The intent is to develop potential solutions to these water resource problems.

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material. (grain size, soil type)

The material to be dredged for the 9 marsh restoration features is primarily silt and clay, and with varying amounts of organic material and sands. For shoreline protection features, the placed material would be rock (200-pound gradation). For the hydrologic / salinity control feature, a concrete structure housing culverts would be constructed with the current levee alignment, and rock (200-pound gradation) would be placed in the outfall channel for scour protection.

(2) Quantity of Material. (cubic yards)

See Fact Sheets (Appendix A) and Table 2-18a-d of the revised Draft Integrated Feasibility and Programmatic Environmental Impact Statement for feature details.

(3) Source of Material.

Marsh restoration material will be dredged from a number of off-shore borrow areas and from the Calcasieu Ship Channel. See Fact Sheets (Appendix A) for feature and borrow area details. Rock material for the shoreline protection features and the single hydrologic / salinity control feature would be imported from outside the study area and transported via barges from an inland commercial quarry.

e. Description of the Proposed Discharge Site(s)

The marsh restoration areas will require a considerable amount of marsh material for marsh creation. The shoreline protection areas are along the Gulf of Mexico and Freshwater Bayou shorelines. One shoreline protection feature will be offshore of the CS-33 project (Holly Beach restoration – sand beach and dune habitat), and the remaining shoreline protection features will be offshore of brackish and saline marsh-dominated shorelines. If no action is taken, the beach and marsh habitats will continue to be subjected to the prevailing erosional processes that would eventually result in a direct loss of the marsh to open water. This would reduce marsh habitat, destroy critical habitat for threatened and endangered species, and species of special interest, impact fisheries resources, and diminish the storm-surge protection benefits of the marsh system.

Hydrologic and salinity control measure 74a is proposed as a spillway structure located on East Calcasieu Lake, located at the breach in the levee south of Lambert Bayou, and would aid in the drainage of storm surge waters from wetlands located behind the Cameron-Creole levee. The structure would be a passive system of up to eight 6-foot flap-gated culverts with a bottom invert of +2.5 feet (NAVD88), with a spillway channel lined with 47,800 tons of rock (250-pound gradation). Water levels of greater than +2.5 feet (NAVD88) would drain through the structure. This is anticipated to occur every 15-20 years due to tropical storms overtopping the Cameron-Creole levee. The benefits and impacts of this structure are programmatic in nature. Additional modeling and NEPA analysis would be required before implementation of this feature.

(1) Location. (map)

See attached Figures 1 through 3 for feature locations.

(2) Size. (acres)

See Fact Sheets (Appendix K) and the Table 2-18a-d of the Main Report.

(3) Type of Site. (confined, unconfined, open water)

The disposal sites for the marsh restoration are comprised of shallow open-water and fragmented marsh. See Fact Sheets (Appendix A) for feature details of construction.

The disposal sites for the reef breakwater features include shallow open water immediately offshore of the Gulf Shoreline. The shoreline protection features would be placed on existing marsh shorelines. The disposal site for the hydrologic /salinity control measure is an existing levee and adjacent area.

(4) Type(s) of Habitat.

Shallow open-water and emergent marsh within the disposal areas provide wetland habitat. Salinity within the disposal areas is variable due to tidal fluctuation; a variety of marine and freshwater fauna utilize the area. These wetland habitats also function as critical nursery areas for various species of finfish and shellfish. Interior marsh is necessary for the successful completion of the life cycles of several species, and provides detritus that forms the basis of the food chain for organisms utilizing the area.

Hydrologic / salinity control measure is proposed as a spillway structure located on East Calcasieu Lake, located at the breach in the levee south of Lambert Bayou.

(5) Timing and Duration of Discharge.

The entire Southwest Coastal Louisiana Study construction schedule is expected to last about 60 months. Dredge spoil retention features would be constructed prior to discharge of dredged material at marsh restoration sites. The timing and duration of each feature is provided in Fact Sheets (Appendix A) and Table2-18a-d of main report.

f. Description of Disposal Method. (hydraulic, drag line, etc.)

Marsh restoration material would be dredged from a number of off-shore borrow areas (see Appendix A) and from the Calcasieu Ship Channel (through USACE maintenance dredging). The contractor would use a hydraulic dredge to excavate fill from the available borrow areas or to convey material from Calcasieu Ship Channel that was dredged during USACE maintenance dredging events. The fill would then be pumped through a series of booster pumps to the marsh creation areas via a submerged sediment pipeline.

Construction access for the hydrologic and salinity measures would be via the access corridor previously permitted for the Cameron Creole levee repair following Hurricane Ike. The access channel for construction equipment would be dredged to a depth of -7 feet (NAVD88) where required with a mechanical dredge to a bottom width of 80 feet, and a top with of approximately 130 feet, with 4H:1V side slopes. Material from the access channel would be stockpiled adjacent to the access channel and returned after construction. With an access channel length of approximately 34,977 feet, approximately 104 acres of state waterbottoms would be dredged for access. Approximately 104 acres of state waterbottoms would be used for temporary placement of dredged material. The staging area would be adjacent to the Calcasieu Shipping Channel and would not impact any wetlands or other habitats.

II. Factual Determinations

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope.

The dredged material for the 9 marsh restoration features would be placed to achieve a post-construction marsh target elevation of +1.5 feet North American Vertical Datum of 1988 (NAVD88) following dewatering. Earthen containment dikes would be constructed of in situ material obtained from within the marsh creation cells with side slopes of no more than 4H:1V with a crown width of approximately 5 feet. The 5 shoreline protection features would have varying elevations and slopes ranging from +3.5 feet NAVD88 with 2:1 side slopes to +3.0 feet NAVD88 with 4:1 side slopes.

For the hydrologic and salinity control measures The structure dimensions are approximately 204 feet wide by 600 feet in length, and would directly impact approximately 3 acres of water bottoms in Calcasieu Lake (state waterbottoms). The structure would be a passive system of up to eight 6-foot flap-gated culverts with a bottom invert of +2.5 feet (NAVD88), with a spillway channel lined with 47,800 tons of rock (250-pound gradation). Water levels of greater than +2.5 feet (NAVD88) would drain through the structure. This is anticipated to occur every 15-20 years due to tropical storms overtopping the Cameron-Creole levee. See Fact Sheets (Appendix A) for feature details.

(2) Sediment Type

The material to be dredged from a number of off-shore borrow areas is primarily silt, with varying amounts of organic material and sand. Detailed grain-size analysis would be performed prior to construction as part of the Preconstruction Engineering and Design (PED) phase. A significant source of sediment is the Atchafalaya River. Sediment travels westward from Atchafalaya Bay and the GIWW. A large percentage of Atchafalaya River sediments are deposited along the Gulf shoreline in the vicinity of Freshwater Bayou while coarser sediments continue westward along the shoreline.

(3) Dredged/Fill Material Movement.

Because of the low velocities of water flow across the 9 marsh restoration features and the construction of earthen retainment dikes within the marsh restoration/nourishment areas, it is anticipated that little or no migration of fill would occur.

Rock placed for the 5 shoreline protection features is expected to gradually sink over time due to the overburden pressure that the rock would create on underlying unconsolidated substrate. The additional placement of rocks during Operations and Maintenance, Repair, Replacement and Rehabilitation is anticipated (on the existing footprint). However, rocks are not expected to shift laterally following placement.

Construction features of the hydrologic and salinity control measures are not expected to move.

(4) Physical Effects on Benthos. (burial, changes in sediment types, etc.)

The discharge of dredged material for the 9 marsh restoration features would smother immobile benthic organisms and force mobile organisms to migrate from the disposal areas. However, it is expected that benthic organisms would re-colonize the newly deposited dredged material due to its similarity with the existing substrate in the disposal areas. The conversion of shallow open-water to marsh would preclude larger aquatic organisms from re-entering the disposal area. However, smaller organisms would continue to have access to the newly formed marsh during high tides. Within the study area, marsh is considered to have a higher ecological value than shallow open-water in a degrading delta due to the loss of the marsh and expansion of open water habitat, and would benefit organisms utilizing adjacent habitats.

The placement of shoreline protection and construction of hydrologic and salinity control feature would smother immobile benthic organisms and force mobile organisms to migrate from the disposal areas; these areas would no longer be available as benthic habitat.

(5) Other Effects. *(PM and H&H)*

No other physical substrate determinations.

(6) Actions Taken to Minimize Impacts.

For the 9 marsh restoration features, the dredged material would be placed to achieve a post-construction marsh target elevation, following dewatering. During construction, effluent from dewatering would be discharged into adjacent wetlands via spill box weirs. Earthen containment dikes would be constructed from in-situ material located within the marsh restoration/nourishment area using a mechanical (clamshell or bucket) dredge. Access for the mechanical dredge would be via the pipeline corridor. The borrow area used for construction of the earthen containment dike would be refilled during the placement of dredged material. One (1) foot of freeboard would be maintained at all times during dredge discharge operations. Containment dikes would be breached in multiple places at target-year 3 (TY3) if necessary to restore fish access if natural degradation is not sufficient. Breach locations would correspond to weir locations.

For the 5 shoreline protection features and the hydrologic / salinity control structure, construction and operation of the structures (placement of rock) would utilize Best Management Practices to avoid and minimize potential adverse impacts to surrounding aquatic and terrestrial environment. Geotextile fabric would be placed to reduce subsidence of placed rock, and rock would be placed with a barge-mounted crane to increase precision of placement.

b. Water Circulation, Fluctuation, and Salinity Determinations

(1) Water

(a) Salinity

Alteration of salinity gradients due to the creation and nourishment of marsh on a basin scale by 9 marsh creation features and 5 shoreline protection features would likely be small and insignificant since existing waterways would not be altered by construction of these features. The single hydrologic / salinity control feature would be operated to drain storm surge water from the Cameron-Creole Watershed more efficiently (working with the existing 5 structures). This would not have an appreciable impact on salinity patterns, since operation of this structure would only occur during storm surges high enough to overtop the levee, and no difference in salinity would be expected between the water within the watershed and in Calcasieu Lake. Additional modeling would be required to better understand how water and salinity patterns would be affected by this feature. Dredge material taken from off-shore borrow areas and placed in the disposal areas may have higher salinity water associated with it compared to the ambient, but the difference would likely be minimal and the affect temporary. The borrow areas would be configured so that stratification would be minimized (long axis parallel to the Gulf shoreline, and with side slopes no steeper than 4(H): 1(V). The 5 shoreline protection features would not result in localized changes to salinities for the areas immediately behind the shoreline protection feature because they would retain connectivity to protected waters through the placement of gaps in the structure to allow hydrologic connectivity, and would not provide a hydraulic barrier to the exchange of water.

(b) Water Chemistry. (pH, etc.)

Placement of dredged and fill materials can result in short term effects on pH. Factors typically associated with dredged and fill material placement activities may cause pH in receiving area waters to shift toward more acidic conditions. These factors include increased turbidity, organic enrichment, chemical leaching, reduced dissolved oxygen, and elevated carbon dioxide levels, among others. The hydraulic placement of dredged sediments for the 9 marsh creation features, placement of rock for the 5 shoreline protection features, and construction of the hydrologic and salinity control feature would result in a localized and temporary reduction in pH within adjacent waters. Tidal currents present in the feature areas would serve to disperse and thereby dilute localized changes to pH resulting from hydraulically transported dredged slurry placement and rock. Following construction activities, pH levels in the area of these features would return to those observed prior to feature construction.

(c) Clarity

Dredging activities and placement of dredged material in the 9 marsh creation features would temporarily reduce water clarity (increase turbidity). Containment of the dredged material and management of the effluent would minimize impacts to water clarity outside of the disposal areas. The placement of rock for the 5 shoreline protection features and the single hydrologic / salinity control feature is expected to result in the disturbance of water bottom, causing a minor, temporary, and localized increase in turbidity levels and decrease in water clarity. Following construction activities, turbidity levels and water clarity in the vicinity of features would return to those which existed prior to construction activities.

(d) Color.

Dredging activities and placement of dredged material in the 9 marsh creation features may temporarily change water color. Turbidity levels are expected to remain high until shortly after nourishment for these features is completed. Upon the completion of marsh creation, waters affected by the construction of these features would gradually clarify, restoring water color to conditions observed prior to construction.

The disturbance of water bottom substrate during placement of rock for the 5 shoreline protection features and the single hydrologic / salinity control feature may result in temporary and localized changes to water color. In addition, because shoreline protection would serve to reduce erosion, some minor changes to water color in areas protected by the rock breakwaters are expected, as the rock would serve to significantly reduce the wave energy-driven resuspension of water bottom substrate for those areas.

(e) Odor.

No changes to water odor outside of the 9 marsh creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature are expected during construction. Following construction activities, water odor in the vicinity of features would return to those which existed prior to construction activities.

(f) Taste.

No changes to water taste outside of the 9 marsh creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature are expected during construction. Following construction activities, water taste in the vicinity of features would return to those which existed prior to construction activities.

(g) Dissolved Gas Levels.

Dredged materials excavated from the borrow sites would contain low but variable concentrations of organic material. Decomposition of organic material within the 9 marsh creation features following discharges of dredged material may result in a temporary reduction in dissolved oxygen or release of ammonia.

Placement of rock for the 5 shoreline protection features and single hydrologic / salinity control feature may result in disturbances of water bottom substrate along the footprint of the features. Because of organic material contained within the substrate, this disturbance may result in minor, localized, and short-term reductions in dissolved oxygen levels. Tidal currents are expected to quickly disperse waters affected by these features, such that no significant impacts to dissolved oxygen levels are anticipated.

(h) Nutrients.

Dredged materials excavated from the borrow sites would contain low but variable concentrations of organic material. Decomposition of organic material within the 9 marsh creation features following discharges of dredged material may result in a release of ammonia.

Placement of rock for the 5 shoreline protection features and single hydrologic / salinity control feature may result in the disturbance of water bottom substrate, which may expose variable levels of organic matter to the water column, resulting in the release of minor amounts of ammonia into the water column. However, as these releases are expected to be minor, and because there is expected to be adequate dissolved oxygen levels in the water column for converting ammonia into non-toxic nitrate, any effects associated with construction

activities associated with these features are expected to be short-lived and would altogether cease following construction.

(i) Eutrophication.

Dredged materials excavated from the borrow sites would contain low but variable concentrations of organic material. Decomposition of organic material within the 9 marsh creation features following discharges of dredged material may result in a release of ammonia. While ammonia and nitrate may stimulate phytoplankton production, adverse or persistent algal blooms are not expected during construction.

Placement of rock for the 5 shoreline protection features and hydrologic / salinity control feature may result in the disturbance of water bottom substrate, which may expose variable levels of organic matter to the water column, resulting in the release of minor amounts of ammonia into the water column. While ammonia and nitrate may stimulate phytoplankton production, adverse or persistent algal blooms are not expected during construction.

(j) Others as Appropriate.

No other water circulation, fluctuation, and salinity determinations.

(2) Current Patterns and Circulation

(a) Current Patterns and Flow.

Alteration of current patterns and water flow impacts would be significant and long term, if not permanent, and positive in nature. Construction and implementation of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature would significantly change local current patterns and local water circulation.

For the 9 marsh creation features, the higher substrate elevations resulting from creation of marsh land in shallow open water and fragmented marsh areas may slightly reduce throughput (current patterns and flow) of water for the footprint of these features. These impacts would be positive by creation of marsh lands in a degrading marsh area.

Because the 5 shoreline protection features would be segmented, main conduits for tidal flows would remain unimpeded by these features. However, shoreline protection would prevent existing current patterns and water circulation. These impacts would be positive by protection of marsh lands in a degrading marsh area.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake. The control feature would only alter the current pattern and water circulation during extreme high-water events, and the impact would be positive by water control of flood waters to drain marsh habitats more efficiently.

(b) Velocity.

Alteration of current water velocity impacts would be significant and long term, if not permanent, and positive in nature. Construction and implementation of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature would significantly change local water velocity.

For the 9 marsh creation features, the higher substrate elevations resulting from creation of marsh land in shallow open water and fragmented marsh areas may slightly reduce throughput (velocity) of water for the footprint of these features. These impacts would be positive by creation of marsh lands in a degrading marsh area.

Because the 5 shoreline protection features would be segmented, main conduits for tidal flows would remain unimpeded by these features. However, shoreline protection would alter existing velocities. These impacts would be positive by protection of marsh lands in a degrading marsh area.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake. Although the control feature would alter existing velocities, the impact would be positive by water control of flood waters. Additional design and analysis would better quantify these changes.

(c) Stratification.

Alteration of current stratification impacts would be significant and long term, if not permanent, and positive in nature. Construction and implementation of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature would significantly change local water stratification.

For the 9 marsh creation features, the higher substrate elevations resulting from creation of marsh land in shallow open water and fragmented marsh areas may slightly reduce throughput (stratification) of water for the footprint of these features. These impacts would be positive by creation of marsh lands in a degrading marsh area.

Because the 5 shoreline protection features would be segmented, main conduits for tidal flows would remain unimpeded by these features. However, shoreline protection would alter existing stratification. These impacts would be positive by protection of marsh lands in a degrading marsh area.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake. Stratification is more of an issue for deeper waterbodies and conduits for freshwater/saltwater. As long as these features occur in shallow open water and would not block major conduits of freshwater/saltwater, they probably wouldn't cause stratification.

(d) Hydrologic Regime.

Hydrologic regimes are dependent on climatic, wind, terrain, vegetation and other hydrologic conditions. Hence, alteration of existing hydrologic regime would likely be considered significant and long term in nature. Construction and implementation of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature would significantly change volumes and flows of waters, primarily as a roughness factor.

For the 9 marsh creation features, the higher substrate elevations resulting from creation of marsh land in shallow open water and fragmented marsh areas may slightly reduce throughput (hydrologic regime) of water for the footprint of these features. These impacts would be positive by creation of marsh lands in a degrading marsh area.

Because the 5 shoreline protection features would be segmented, main conduits for tidal flows would remain unimpeded by these features. However, shoreline protection would alter existing hydrologic regime. These impacts would be positive by protection of marsh lands in a degrading marsh area.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake. Although the control feature would alter existing hydrologic regime, the impact would be positive by water control of flood waters.

(3) Normal Water Level Fluctuations.

Alteration of normal water level fluctuations would be significant and long term, if not permanent, and positive in nature. Construction and implementation of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature would significantly change normal water level fluctuations.

For the 9 marsh creation features, the higher substrate elevations resulting from creation of marsh land in shallow open water and fragmented marsh areas may slightly reduce throughput (normal water level fluctuations) of water for the footprint of these features. These impacts would be positive by creation of marsh lands in a degrading marsh area.

Because the 5 shoreline protection features would be segmented, main conduits for tidal flows would remain unimpeded by these features. However, shoreline protection would alter normal water level fluctuations. These impacts would be positive by protection of marsh lands in a degrading marsh area.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake. Although the control feature would alter normal water level fluctuations, the impact would be positive by water control of flood waters.

(4) Salinity Gradients.

There would likely be no significant alterations of salinity gradients on the localized scale by creation and nourishment of marsh on a basin scale by 9 marsh creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature that would move flood waters from marsh and into Calcasieu Lake.

For the 9 marsh creation features, the higher substrate elevations resulting from creation of marsh land in shallow open water and fragmented marsh areas may slightly reduce throughput (salinity gradients) of water for the footprint of these features. These impacts would be positive by creation of marsh lands in a degrading marsh area.

Because the 5 shoreline protection features would be segmented, main conduits for tidal flows would remain unimpeded by these features. Therefore, shoreline protection would not significantly alter salinity gradient. These features would provide protection of marsh lands in a degrading marsh area.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake. The control feature would not alter salinity gradients, as the water control structure, like other structure and natural waterways would move flood waters and the draining of waters from the brackish marshes of the Cameron-Creole Watershed into Calcasieu Lake.

(5) Actions That Would Be Taken to Minimize Impacts.

Storm Water Pollution Prevention Plans (SWPPPs) shall be prepared in accordance with good engineering practices emphasizing storm water Best Management Practices (BMPs) and complying with Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT). The SWPPP shall identify potential sources of pollution, which may reasonably be expected to affect storm water discharges associated with the construction activity. In addition, the SWPPP shall describe and ensure the implementation of practices which are to be used to reduce pollutants in storm water discharges

associated with the construction activity and to assure compliance with the terms and conditions of this permit.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site.

Suspended particulates/turbidity impacts associated with construction activities would be significant but temporary in nature and occur only during construction of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. The placement of rock for the shoreline protection features is expected to result in the disturbance of water bottom, causing a minor, temporary, and localized increase in suspended particulate/turbidity levels. Following construction activities, turbidity levels in the vicinity of features would return to those which existed prior to construction activities.

(2) Effects on Chemical and Physical Properties of the Water Column.

(a) Light penetration.

Water column effects, including light penetration, associated with construction activities would be temporary and occur only during construction of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities.

(b) Dissolved oxygen

Water column effects, including dissolved oxygen, associated with construction activities would be temporary and occur only during construction of the 9 Marsh Creation features, and 5 shoreline protection features, and the single hydrologic / salinity control feature. Decomposition of organic material within the 9 marsh creation features following placement of dredged material may result in a temporary reduction of dissolved oxygen.

Placement of rock for the 5 shoreline protection features and the single hydrologic / salinity control feature may result in disturbances of water bottom substrate along the footprint of the features during construction. Because of organic material contained within the substrate, this disturbance may result in minor, localized, and short-term reductions in dissolved oxygen levels. Tidal currents are expected to quickly disperse waters affected by these features, such that no significant impacts to dissolved oxygen levels are anticipated.

These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities.

The hydrologic / salinity control feature would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake in conjunction with the 5 existing water control structures in the Cameron-Creole levee. The measure would not be used to manage daily tidal exchange from Calcasieu Lake, but would only operate when storm surge waters overtop the levee. The hydrologic / salinity control feature could impact dissolved oxygen levels in the Cameron-Creole Watershed by draining excess

water more effectively, and this impact would be positive. The additional introduction of floodwaters from the Cameron-Creole Watershed into Calcasieu Lake could introduce particulate organic material from the watershed, which may reduce dissolved oxygen levels in the lake. However, since this feature would be used in conjunction with the 5 existing water control structures in the Cameron-Creole levee, this increased effect is anticipated to be minimal.

(c) Toxic metals and organics.

Water column effects, including toxic metals and organics, associated with construction activities would be temporary and occur only during construction of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature. Decomposition of organic material within the disposal areas following placement of dredged material may result in a temporary release of ammonia. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. Material to be used for marsh creation and material to be excavated for access channels for the shoreline protection features and hydrologic / salinity control features is being obtained from offshore water bottoms and the Calcasieu Ship Channel. Some access dredging may be required in Calcasieu Lake, which would be an along existing authorized access channel. Initial evaluation of Environmental Database Reviews for the project areas indicate no recognized environmental conditions, including unmitigated oil spills or other activities, in the borrow, access or placement areas.

(d) Pathogens.

Water column effects, including pathogens, associated with construction activities would be temporary and occur only during construction of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. No effects on water column pathogens are anticipated from the dredged/fill material disposal activities.

(e) Aesthetics.

Water column effects, including aesthetics, associated with construction activities would be temporary and occur only during construction of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities.

(f) Others as Appropriate. *(PM and H&H)*

Water column effects, including particulate matter, associated with construction activities would be significant but temporary in nature and occur only during construction of the 9 Marsh Creation features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities.

The proposed salinity control feature would not change normal hydrology and hydraulic patterns, but would drain the Cameron Creole Watershed more efficiently after storm surge events, operating down to a water elevation of +2 feet NAVD88.

(3) Effects on Biota.

(a) Primary production, photosynthesis.

Effects on biota, including primary production photosynthesis, associated with construction activities would be temporary and occur only during construction of the 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. It is anticipated that the 35 Chenier reforestation features would have positive impacts and increase primary production and photosynthesis on terrestrial areas planted, but not within waters of the US.

(b) Suspension/filter feeders.

The effect of marsh creation and shoreline protection feature construction would be significant and long term, if not permanent. The placement of dredged material for the 9 marsh restoration features and rock for the 5 shoreline protection and the single hydrologic / salinity control features would smother immobile suspension/filter feeders and force mobile organisms to migrate from the disposal/placement areas. However, it is expected that benthic suspension/filter feeders would re-colonize the newly deposited dredged material due to its similarity with the existing substrate in the disposal areas. The conversion of shallow open-water to marsh would preclude larger aquatic suspension/filter feeders from re-entering the disposal area. However, smaller organisms would continue to have access to the newly formed marsh during high tides. Marsh is considered to have a higher ecological value than shallow open-water, and would benefit organisms utilizing adjacent habitats. Other effects on biota, including suspension/filter feeders, associated with construction activities would be temporary and occur only during construction of the 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. This could include temporary increases in turbidity levels from placement of dredged material and rock, which could clog the gills and feeding mechanisms of sessile suspension/filter-feeding organisms and temporarily displace mobile suspension/filter-feeding organisms. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. It is anticipated that the 35 Chenier reforestation features would not have any impacts on suspension/filter feeders.

(c) Sight feeders.

Effects on biota, including sight feeders, associated with construction activities would be temporary and generally occur only during construction of the 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. The conversion of shallow open-water to marsh and the construction activities for the 5 shoreline protection and the single hydrologic / salinity control features would displace sight feeders. However, smaller organisms would continue to have access to the newly formed marsh during high tides. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following

construction activities. Other effects on biota, including sight feeders, associated with construction activities would be temporary and occur only during construction of the 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. This could include temporary increases in turbidity levels from placement of dredged material and rock, which could impede the foraging success of sight-feeding organisms. These temporary impacts would be controlled by Best Management Practices during construction. During marsh creation, effluent from the dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. The hydrologic / salinity control feature would not be used to manage daily tidal exchange from Calcasieu Lake, but would only operate when storm surge waters overtop the levee. The discharge of waters from the Cameron-Creole Watershed could result in turbidity levels in Calcasieu Lake being kept higher than normal for an extended time following intense tropical storms, but as this feature would operate in conjunction with the five other hydrologic / salinity control features in the levee, the increased effect from the addition of this structure would be minimal.

(4) Actions Taken To Minimize Impacts.

For the 9 marsh creation features, the dredged material would be placed to achieve a post-construction marsh target elevation, following dewatering. During construction, effluent from dewatering would be discharged into adjacent wetlands via spill box weirs. Earthen containment dikes would be constructed from in-situ material located within the marsh restoration/nourishment area using a mechanical (clamshell or bucket) dredge. Access for the mechanical dredge would be via the pipeline corridor. The borrow area used for construction of the earthen containment dike would be refilled during the placement of dredged material. One (1) foot of freeboard would be maintained at all times during dredge discharge operations. Containment dikes would be breached in multiple places at TY3 if necessary to restore fish access if natural degradation is not sufficient. Breach locations would correspond to weir locations.

For the 5 shoreline protection features and the single hydrologic / salinity control structure, construction and operation of the structure would utilize Best Management Practices to avoid and minimize potential adverse impacts to surrounding aquatic and terrestrial environment.

d. Contaminant Determinations.

An evaluation of the Environmental Data Resources report, performed during the Southwest Coastal Louisiana Phase I Environmental Site Assessment, indicates there appear to be no recognized environmental conditions within the study area. Further research is being conducted concerning potential sediment contaminants in the Calcasieu Ship Channel and the GIWW (i.e., the reaches within the Calcasieu restoration area as outlined in the Phase I maps). If contaminant levels are discovered to be significant, the reach in the Calcasieu Ship Channel may be avoided and material obtained from adjacent, less-contaminated reaches.

Water and sediment from 32 stations within the ship channel were collected in December 2006. Samples were analyzed in accordance with the protocols described in *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual* (ITM) (USEPA/USACE, 1998) and *Evaluation of Dredged Material Proposed for Disposal at Island, Nearshore, or Upland Confined Disposal Facilities - Testing Manual* (UTM) (USACE, 2003). Only the stations relevant to the Southwest Coastal Louisiana Study are discussion below.

Physical and chemical analyses were performed on sediment from each in-channel station. Dredged Material Management Unit (DMMU) 4 consisted of in-channel stations D4-06-1 through D4-06-5 (approximate channel mile 24 to channel mile 21 and Devil's Elbow). DMMU 5 consisted of in-channel stations D5-06-1 through D5-06-5 (approximate channel mile 21 to channel mile 16); and DMMU 6 consisted of in-channel stations D6-06-1 through D6-06-6 (approximate channel mile 16 to channel mile 5.

Results from chemical analyses of sediment from the three DMMUs within the Calcasieu River and Pass, revealed the presence of 12 metals, nine PAHs, four pesticides, three petroleum hydrocarbons, three PCBs, and ammonia.

Concentrations of most metals detected in river sediments were similar and within the same order of magnitude for the three DMMUs. Metal detected included antimony (0.101 to 0.111 ppb), arsenic (2.26 to 2.70 ppb), barium (68.6 to 116 ppb), beryllium (0.396 to 0.564 ppb), chromium (6.90 to 8.58 ppb), copper (5.00 to 6.90 ppb), hexavalent chromium (0.0957 to 0.152 ppb), lead (7.60 to 8.42 ppb), mercury (0.0335 to 0.0501 ppb), nickel (6.92 to 8.54 ppb), selenium (0.253 to 0.502 ppb), and zinc (24.4 to 26.4 ppb). Antimony and hexavalent chromium were not detected at DMMU 5.

Polycyclic aromatic hydrocarbons (PAHs) were detected in DMMUs 4 and 5, but not in DMMU 6. While PAHs were most prevalent in DMMU 4, the sum of all detected PAHs was relatively low with a total of 158 ppb. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene were detected at DMMU 4. Fluoranthene was the only PAH analyte detected at DMMU 6 (14.0 ppb).

Pesticides were detected in two DMMUs, and were most prevalent in DMMU 4. Concentration of 4,4'-DDT were detected in DMMUs 4 and 6 (2.08 ppb and 1.85 ppb). Other pesticides were detected in river sediments only: endosulfan II in DMMUs 4 and 6 (2.05 ppb and 2.11 ppb), heptachlor in DMMU 4 (0.574 ppb), and gamma-BHC in DMMU 4 (0.618 ppb).

Diesel range organics (DRO) and ammonia were common to river sediments. DRO ranged from 18,157 to 43,600 ppb and ammonia ranged from 24,714 to 27,000 ppb, and tended to decrease from upper (DMMU 4) to lower reaches (DMMU 6) of the river. Gasoline range organics (GRO) and motor oil range organics (MRO) were detected only in DMMU 4 (172 ppb and 50,500 ppb, respectively) above Calcasieu Lake. PCB 1016 was detected in DMMUs 4 and 6 (2.0 ppb and 0.7 ppb), while PCB 1254 and PCB 1260 only occurred in DMMU 4 (1.2 ppb and 0.9 ppb). A single volatile organic compound (tetrachloroethylene at 1.3 ppb) was detected at DMMU 6.

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton.

Effects on aquatic ecosystems and organisms, including plankton, associated with construction activities would be temporary and occur only during construction of the 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh restoration, effluent from dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities.

(2) Effects on Benthos.

Effects on aquatic ecosystems and organisms, including benthos, associated with construction activities would be temporary and occur only during construction of the 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. These temporary impacts would be controlled by Best Management Practices during construction. During marsh restoration, effluent from dredge discharge pipe would be directed to adjacent fragmented marsh for nourishment; conditions would return to ambient following construction activities. It is not anticipated that the 35 Chenier reforestation features would have any such impacts.

(3) Effects on Nekton.

Nekton would be displaced from 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. The activity would not significantly impact nekton, which are mobile enough to avoid these areas during construction. Marsh restoration features and the rock placed for shoreline protection and the single hydrologic / salinity control feature would provide a variety of habitats that could benefit nekton.

(4) Effects on the Aquatic Food Web.

The aquatic food web would benefit from both short and long term changes to the disposal areas, including additions in energy to basal elements of the food web, habitat preservation, and increased habitat complexity. Nutrients and detritus released during the discharge of dredged material into marsh restoration areas would be added to the existing food web.

(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges.

The effect of one marsh creation feature and the single hydrologic / salinity control feature construction would be significant and long term, if not permanent, positive in nature and associated with changing the creation and protection of wetlands, which in turn influence the volumes and flows of waters into and out of the wetlands of the Sabine National Wildlife Refuge by construction of one of the 9 Marsh Creation features within the Cameron Creole Watershed and the single hydrologic / salinity control feature that would move flood waters from marsh and into Calcasieu Lake. The construction and operation of the single hydrologic / salinity control feature could result in the long-term loss of 56 acres of brackish marsh compared to the no-action alternative, but the quality of the habitat (as measured in Average Annual Habitat Units [AAHU]) is expected to increase slightly by 267 AAHU. Additional modeling is needed to confirm these numbers. The other activities would not impact other sanctuaries and refuges.

(b) Wetlands.

Some existing fragmented wetlands would be significantly and permanently impacted, but positive in nature, by marsh creation and nourishment of 9 marsh restoration features, 5 shoreline protection features, and operation of single hydrologic / salinity control feature that would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake. The construction and operation of the single hydrologic / salinity control feature could result in the long-term loss of 56 acres of brackish marsh compared to the no-action alternative, but the quality of the habitat (as measured in Average Annual Habitat Units [AAHU]) is expected to increase slightly by 267 AAHU. Additional modeling is needed to confirm these numbers.

(c) Mud Flats.

Some existing mud flats would be significantly and permanently impacted by marsh creation and nourishment of 9 marsh restoration features, 5 shoreline protection features, and operation of single hydrologic / salinity control feature that would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake. The placement of fill material for marsh creation and rock for shoreline protection features and the single hydrologic / salinity control feature would cover mud flats, converting them to other habitats (intertidal marsh and rock, respectively). Since intertidal marsh is degrading in the study area, this conversion to marsh and the protection of existing marsh would be beneficial overall to the study are.

(d) Vegetated Shallows.

Some existing vegetated shallows would be significantly and permanently impacted by marsh creation and nourishment of 9 marsh restoration features, 5 shoreline protection features, and operation of single hydrologic / salinity control feature that would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake. Permanent impacts to state waterbottoms through the conversion to marsh or the placement of rock include 14,346 acres from the 9 marsh restoration features, 278.4 acres from the 5 shoreline protection features, and 3 acres from the hydrologic / salinity control feature. This would result in the vegetation being covered by fill material. Not all of these shallow-water areas are vegetated (range of 0 to 40% coverage), and the features would encourage the growth of submerged aquatic vegetation through reduction in water fetch and wave energy.

(e) Coral Reefs.

The activity would not impact coral reefs.

(f) Riffle and Pool Complexes.

The activity would not impact riffle and pool complexes.

(6) Threatened and Endangered Species.

The Southwest Coastal Louisiana Study Area encompasses critical habitat for the piping plover. Marsh restoration and shoreline protection features would not adversely modify the critical habitat. Some minor displacement of piping plover along pipeline corridors (< 2 acres total) could occur during construction activities. Precautionary measures would be taken to avoid harming all wildlife – if present – during construction activities, including restricting mobilization and demobilization to periods of the year with low occurrence of piping plover.

(7) Other Wildlife.

The 9 marsh restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature are expected to preserve marsh areas within and adjacent to the Southwest Coastal Louisiana Study Area. This marsh habitat provides an array of foraging, breeding, and cover habitat for a variety of birds, mammals, and reptiles.

(8) Actions to Minimize Impacts.

For the 9 marsh restoration features, the dredged material would be placed to achieve a post-construction marsh target elevation, following dewatering. During construction, effluent from dewatering would be discharged into adjacent wetlands via spill box weirs. Earthen containment dikes would be constructed from in-situ material located within the marsh restoration/nourishment area using a mechanical (clamshell or bucket) dredge. Access for the mechanical dredge would be via the pipeline corridor. The borrow area used for construction of the earthen containment dike would be refilled during the placement of dredged material. One (1) foot of freeboard would be maintained at all times during dredge discharge operations. Containment dikes would be breached in multiple places at TY3 if necessary to restore fish access if natural degradation is not sufficient. Breach locations would correspond to weir locations.

For the 5 shoreline protection features and the hydrologic / salinity control structure, construction and operation of the structure would utilize Best Management Practices to avoid and minimize potential adverse impacts to surrounding aquatic and terrestrial environment.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination.

The State of Louisiana, Department of Environmental Quality (LDEQ), mandates a mixing zone no greater than 200 feet from discharge locations in coastal lakes. Any contaminant release resulting from construction activities should diminish to ambient conditions before exiting the mixing zone. The discharge of dredged material at marsh restoration sites and placement of access channel material as sidecast adjacent to the access channel are not expected to introduce contaminants in the Southwest Coastal Louisiana Study Area or outside of the mixing zone. An Environmental Database Review conducted as part of the Phase I Environmental Site Assessment did not discover any recognized environmental conditions that would indicate a high potential of introducing contaminants through fill material or rock placement.

(2) Determination of Compliance with Applicable Water Quality Standards.

LDEQ mandates a mixing zone no greater than 200 feet from discharge locations in coastal lakes. The discharge of dredged material and stone during construction of marsh restoration, shoreline protection, and access channel features are not expected to exceed water quality criteria in the Sabine Pass, Calcasieu Lake, Calcasieu Ship Channel, Freshwater Bayou, Vermilion Bay, Gulf of Mexico, or adjacent bayous more than 200 feet from the discharge sites.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and private water supply.

The activity would not impact municipal and private water supply. Large quantities of moderately saline to highly saline groundwater are generally located throughout southern Cameron Parish (with the exception of an area approximately 20 miles east of the town of Cameron) and southwestern Vermilion Parish. All fresh groundwater withdrawals in Cameron and Vermilion Parishes come from the Chicot aquifer system, which mainly underlies the north-central and north-eastern areas of Cameron Parish and most of Vermilion Parish. Underlying aquifers in the southern portion of the parishes contain only saltwater. The base of the Chicot aquifer system's fresh groundwater ranges from about 300 feet below the National Geodetic Vertical Datum of 1929 (NGVD29) in the southeastern part of Cameron Parish to about 800 feet below NGVD29 in the north-central area, and in Vermilion parish ranges from less than 300 feet below NGVD29 in southwestern area to about 1,000 ft below NGVD29 in northeastern Vermilion Parish. No fresh groundwater is present in the southern portion of the parishes (where many of the restoration area features are located) or along the southeastern coastline (USGS 2014). The Town of Hackberry is the only drinking water source within the project area.

(b) Recreational and commercial fisheries.

The activity would significantly impact human use characteristics including adverse effects on recreational and commercial fisheries, but these impacts would generally be temporary and localized. Some temporary restrictions of recreational and commercial fisheries could occur at construction sites during construction. After construction, an increase in recreational fisheries could be realized near shoreline protection features, which could attract recreational fishery species due to the addition of structure to the habitat. In marsh creation areas, the former shallow open water would no longer be available for recreational or commercial fisheries, but the created habitat would support fisheries species.

(c) Water-related recreation.

The activity would significantly impact human use characteristics including adverse effects on water-related recreation, but these impacts would generally be temporary and localized. Some temporary restrictions of water-related recreation could occur at construction sites during construction.

(d) Aesthetics.

The activity would significantly impact human use characteristics including adverse effects on aesthetics, but these impacts would generally be temporary and localized. Some temporary impacts to aesthetics could occur at construction sites during construction and would be temporary. This would be primarily result from the presence of construction-related equipment, and the permanent placement of rock for the shoreline protection features and scour protection for the hydrologic / salinity control feature.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar preserves.

The effect of one marsh creation feature and the single hydrologic / salinity control feature construction would be significant and long term, if not permanent, positive in nature and associated with changing the creation and protection of wetlands, which in turn influence the volumes and flows of waters into and out of the wetlands of the Sabine National Wildlife Refuge by construction of one of the 9 Marsh Creation features within the Cameron Creole Watershed and the single hydrologic / salinity control feature that would move flood waters from marsh and into Calcasieu Lake. The other activities would not impact other parks, national historic monuments, national seashores, wilderness areas, research sites, and similar preserves.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

No adverse cumulative effects are expected from the discharge of dredged material or from changes to the existing landscape after completion of project features. Over the 50-year period of analysis, the NER TSP would protect, restore, and nourish a net total of 14,279 acres of emergent marsh (8,714 ac. from nine marsh creation features, 5,509 ac. from five shoreline protection features, and 56 ac. from the single hydrologic / salinity control feature), with a net ecological benefit of 5,363 Average Annual Habitat Units (AAHUs; 3,481 AAHUs from nine marsh creation features, 1,615 AAHUs from five shoreline protection features, and 267 AAHUs from the single hydrologic / salinity control feature) Cumulative impacts of implementing the NER TSP to the aquatic ecosystem would be the synergistic effect with the additive combination of impacts and benefits for overall net acres restored by other Federal, state, local, and private restoration efforts near the Southwest Coastal Louisiana Study Area, such as: South White Lake Shoreline Protection (844 net acres benefited), Holly Beach Sand Management (330 net acres benefited), East Sabine Lake Hydrologic Restoration (225 net acres benefited), and Grand White Lakes Landbridge Protection (213 net acres benefited).

h. Determination of Secondary Effects on the Aquatic Ecosystem

No secondary effects, other than the effects discussed in previous sections (some of which may be considered secondary), are expected. Over the 50-year period of analysis, the NER TSP would provide a net benefit of 14,279 acres of emergent marsh (8,714 ac. from nine marsh creation features, 5,509 ac. from five shoreline protection features, and 56 ac. from the single hydrologic / salinity control feature), with 5,363 AAHUs (3,481 AAHUs from nine marsh creation features, 1,615 AAHUs from five shoreline protection features, and 267 AAHUs from the single hydrologic / salinity control feature). Transitional coastal habitats restored by the NER TSP would indirectly benefit benthic resources by providing increased dissolved organic compounds and detritus that would, in turn, provide food and energy resources for benthic organisms. This would eventually increase local epifauna which, in turn, would help reduce turbidity, regenerate ammonia and phosphorous, and serve as important sources of food for birds, nekton, and people.

An increase in the export of dissolved organic compounds and detritus from the restored and nourished coastal habitats would benefit local plankton populations by increasing the planktonic food web. Some local plankton populations would be displaced and there would be a long-term loss of some shallow open water habitats in the Southwest Coastal Louisiana Study Area due to construction project features. However, there is an abundance of shallow open water habitat throughout the Southwest Coastal Louisiana Study Area for use by planktonic resources.

III. Findings of Compliance or Non-compliance with the Restrictions on Discharge

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impacts on the Aquatic Ecosystem

The discharge represents the least environmentally damaging practicable alternative. The proposed action itself consists of measures to minimize the adverse effects of storm water erosion. This would include the discharge for hydraulic placement of material for marsh creation features, as well as the operation of the hydrologic / salinity control feature. The operations of the hydrologic / salinity control feature would mimic existing water discharge patterns of the other 5 hydrologic / salinity control features in the Cameron-Creole levee.

c. Compliance with Applicable State Water Quality Standards

The material released during dredging and disposal operations are not expected to exceed Louisiana Water Quality Standards.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the Clean Water Act

The activity does not appear to violate effluent standards prohibited under Section 307 of the Clean Water Act.

e. Compliance with the Endangered Species Act of 1973

The activity is compliant with the Endangered Species Act of 1973, as amended. The proposed action would not significantly affect endangered or threatened species or their critical habitats.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

The activity is compliant with specified protection measures for marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972. All disposal sites and effects are in inland waters. No effects would occur in ocean waters beyond the shoreline of the Gulf of Mexico.

g. Evaluation of Extent of Degradation of the Waters of the United States

(1) Significant Adverse Effects on Human Health and Welfare

(a) Municipal and Private Water Supplies.

The activity would not cause or contribute to significant degradation of waters of the United States including adverse effects on municipal and private water supplies.

(b) Recreational and Commercial Fisheries.

Excavation borrow sites and discharge of dredged material in shallow open-water areas would result in a loss of benthic prey items and the availability of open water habitat. These adverse effects would be temporary and/or localized to the Southwest Coastal Louisiana Study Area. After the conclusion of disposal activities, dredged material disposal sites would convert to beneficial marsh areas and turbidity would return to pre-construction conditions. Fisheries catches would likely return to conditions approximating those now occurring or improve somewhat over these conditions due to the positive effects of increased marsh acreage.

(c) Plankton.

Effects on plankton would be temporary and occur only during construction of the 9 marsh Restoration features, 5 shoreline protection features, and the single hydrologic / salinity control feature. Conditions would return to ambient following construction activities.

(d) Fish.

Fish would be temporarily displaced during project construction and disposal operations. The proposed action is expected to preserve marsh and areas of inter-tidal emergent vegetation, which provide an array of foraging, breeding, spawning, and cover habitat for a variety of adult and juvenile fishes.

(e) Shellfish.

Shrimp and crab are the primary shellfish inhabiting the Study Area. Effects on these species would be similar to those described above for fish.

(f) Wildlife.

The proposed action is expected to preserve marsh and areas of intertidal emergent vegetation that provide an array of foraging, breeding, and cover habitat for a variety of birds, mammals, and reptiles.

(g) Special Aquatic Sites.

Some existing special aquatic sites would be significantly and permanently impacted, but positive in nature by marsh restoration and nourishment of 9 marsh restoration features, 5 shoreline protection features, and operation of single hydrologic / salinity control feature that would be constructed to operate only during high flood levels to redirect waters from flooded marsh lands into Calcasieu Lake.

(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems.

The activity would not cause or contribute to significant degradation of waters of the United States including adverse effects on life stages of organisms dependent on the aquatic ecosystems. The proposed action is expected to preserve marsh and areas of inter-tidal emergent vegetation, which provide an array of foraging, breeding, spawning, and cover habitat for a variety of adult and juvenile fishes, birds, mammals, and reptiles.

(3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity and Stability.

The activity would not cause or contribute to significant degradation of waters of the United States including adverse effects on ecosystem diversity, productivity and stability. The proposed action would preserve marsh and areas of inter-tidal emergent vegetation, thereby preserving diversity, productivity, and stability of the Southwest Coastal Louisiana Study Area.

(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Resources.

The activity would not cause or contribute to significant degradation of waters of the United States including adverse effects on recreational, aesthetic, and economic resources. The proposed action would preserve marsh and areas of inter-tidal emergent vegetation, thereby preserving areas that contribute to recreational, aesthetic, and economic benefits.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Substrate at the shallow open-water disposal sites are similar to dredged material that would be discharged during marsh restoration. Dredged material discharged at marsh restoration sites would be confined by earthen retention dikes, marsh or other natural features, and the shoreline to reduce migration of fill into the Gulf of Mexico and other adjacent waterways. Dredged material would be discharged at the 9 marsh restoration sites to elevations conducive to marsh development.

i. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged Material (specify which) is or are (select one)

(1) Specified as complying with the requirements of these guidelines; or,

NA

(2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

On the basis of the guidelines, the proposed disposal sites for the discharge of dredged material comply with the requirement of these guidelines, with the inclusion of appropriate and practicable conditions to minimize pollution or adverse effects on the aquatic ecosystem.

(3) Specified as failing to comply with the requirements of these guidelines.

NA

IV. Evaluation Responsibility

a. Water Quality Input Prepared by:
William P. Klein, Jr., Biologist

b. Project Description and Biological Input Prepared by:
William P. Klein, Jr., Biologist

Date

Joan Exnicios

Chief, Environmental Planning

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8. USGS, Water Resources of Vermilion Parish, Louisiana, Louisiana Department of Transportation and Development, December 2014.

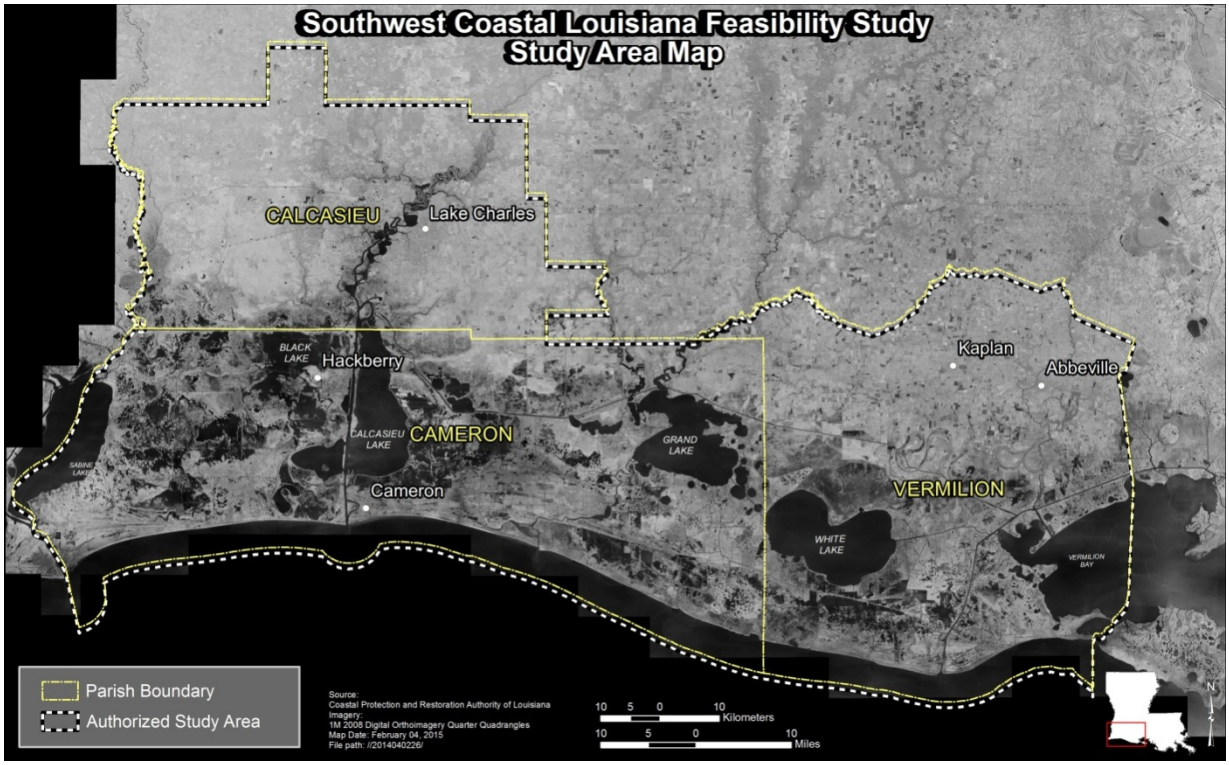

Figure 1. Study Area

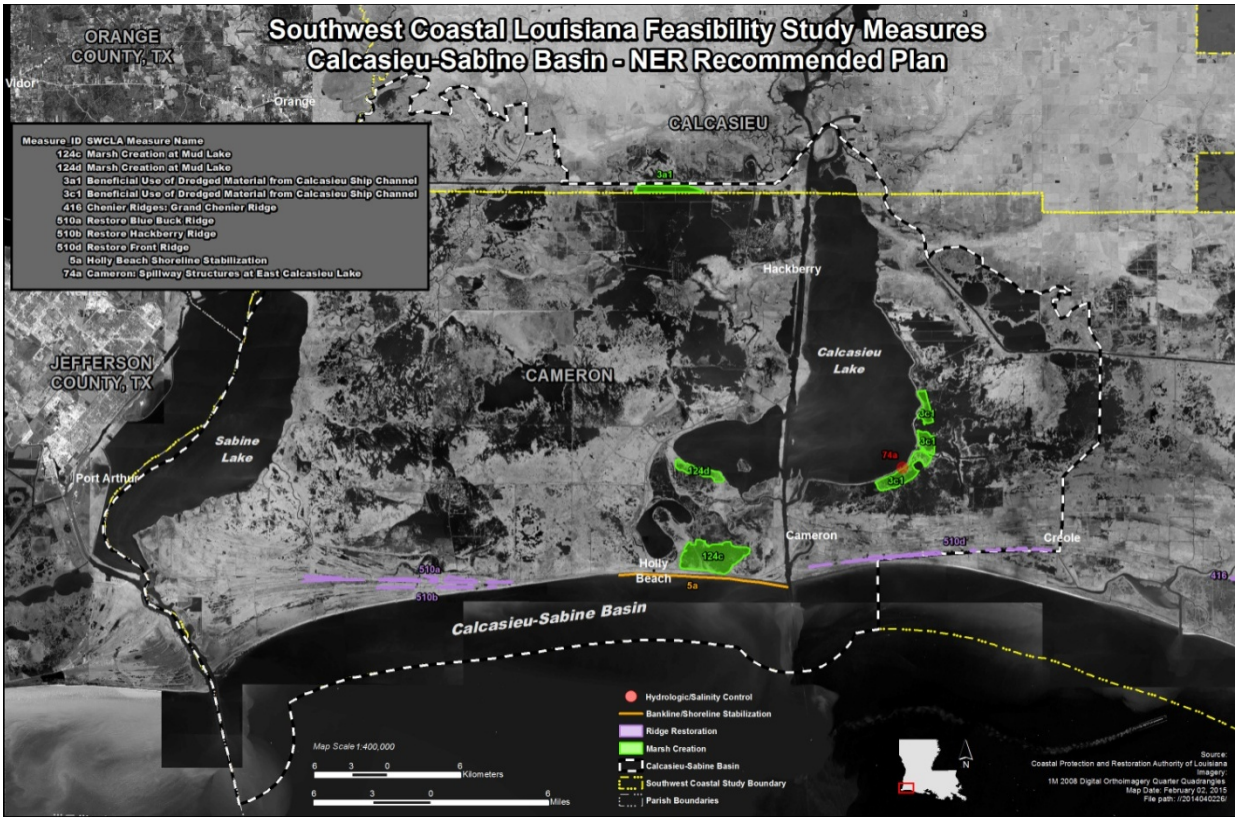

Figure 2. Western portion of the Study Area.

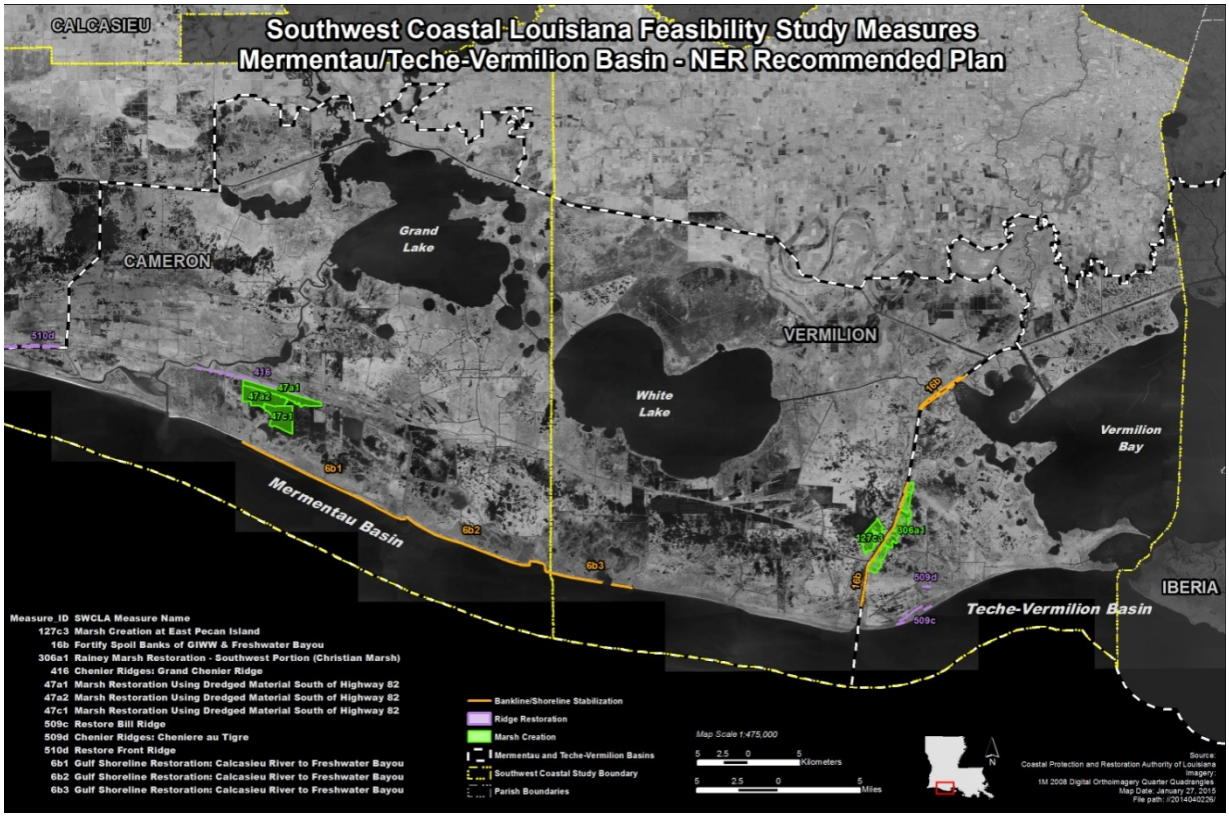

Figure 3. Eastern portion of the Study Area.

DEPARTMENT OF THE ARMY
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REPLY TO

SOUTHWEST COASTAL LOUISIANA
REVISED INTEGRATED DRAFT FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX A

Annex B

Louisiana Coastal Resources Program Consistency Determination

COASTAL ZONE CONSISTENCY DETERMINATION

INTRODUCTION

Section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et. seq. requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination has been prepared for the proposed_Southwest Coastal Louisiana project. Coastal Use Guidelines were written in order to implement the policies and goals of the Louisiana Coastal Resources Program, and serve as a set of performance standards for evaluating projects. Compliance with the Louisiana Coastal Resources Program, and therefore, Section 307, requires compliance with applicable Coastal Use Guidelines.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The low elevation and proximity to the Gulf of Mexico places the unique environment and cultural heritage of southwest Louisiana communities at risk from storm surge flooding and coastal erosion. Land subsidence and rising sea level is expected to increase the potential for coastal flooding, shore erosion, saltwater intrusion, and loss of wetlands and chenier habitats.

The study purpose is to evaluate coastal storm flood damages and coastal ecosystem degradation in Cameron, Calcasieu, and Vermilion parishes in Louisiana. The intent is to develop potential solutions to these water resource problems. This is an interim response to the study authority. The impacts described here are programmatic in nature for the NED Plan; and detailed in nature for the feasibility NER Plan. Subsequent National Environmental Policy Act (NEPA) documents will analyze in detail site specific project(s) impacts of the NED Plan prior to implementation; whereas the NER Plan is expected to be approved for construction without the need for any additional NEPA actions.

The Federal objective of water and related land resources planning is to provide the greatest net contribution to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. The ecosystem objective is to contribute to national ecosystem restoration by restoring function and structure to significant ecological resources.

GENERAL DESCRIPTION

The Southwest Coastal Louisiana (SWC) project proposed by the CEMVN would provide nonstructural hurricane and storm surge damage risk reduction measures as well as ecosystem restoration features in the 4,700 square mile study area located in Calcasieu, Cameron, and Vermilion Parishes in southwest Louisiana. Impacts of both the NED and the NER plans are described in the revised Draft PEIS.
Communities in the SWC area are at increasing risk to storm surge flooding due to wetland loss, relative sea level rise, and land subsidence. The NED purpose of this project is to provide hurricane and storm damage risk reduction to reduce the risk of flood damages caused by hurricane and storm surges. Proposed measures of the NED nonstructural plan include residential and non-residential structure elevation, floodproofing, and the acquisition of qualifying structures to reduce potential damages from future tropical storms and hurricanes. Nonstructural berms for warehouses were also evaluated.

The NER purpose of the SWC project is to significantly restore environmental conditions for the Chenier Plain ecosystem, as more fully described in the Louisiana Coastal Area, Ecosystem Restoration Study (2004). CEMVN proposes ecosystem restoration measures that include nine marsh restoration/nourishment

features, five Gulf shoreline/protection features, a hydrologic and salinity control feature ,and a chenier reforestation that includes invasive species control and planting seedling trees multiple locations in Cameron and Vermilion Parishes.

There is a potential for beneficial direct, indirect, and cumulative impacts to wetlands, wildlife, fisheries, and water quality due to the implementation of the NER Plan. Although the proposed action is programmatic in nature for the NED component and a feasibility-level for the NER component, appropriately detailed impact analysis was conducted on both the NED and NER resources. We do not anticipate a need to mitigate for habitat impacts as a result of either the NED or the NER Tentatively Selected Plans (TSPs). Environmental Justice (EJ) requires the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. There is a potential for negative adverse impacts and an inequitable distribution of EJ burdens to certain communities in the study area depending on how the nonstructural measures are applied. As the NED Plan is programmatic, additional analysis and outreach to identified EJ communities would be conducted during implementation of the nonstructural program in order to minimize any potential disproportionate impacts and develop appropriate mitigation strategies, if and as necessary. The study will be fully compliant with Executive Order 12898.

The National Economic Development (NED) Plan
The NED TSP (Nonstructural 0-25 Year Floodplain Plan) consists of nonstructural measures such as:

- Elevation of residential structures to the predicted 2075, 100-year Base Flood elevation unless the required elevation is greater than a maximum of 13 feet above ground level.
- "Buy out" and demolition of certain at-risk eligible structures within the floodplain.
- Dry flood proofing of non-residential structures.
- Construction of barriers such as berms and floodwalls no greater than 6 feet in height above grade around non-residential structures.
- Installation of flood warning systems.
- Preparation and implementation of Flood Preparedness Plans, and Flood Response & Evacuation Plans (community-wide and individually).
- Floodplain regulation and floodplain management by the Non-Federal sponsor and local governments.
- Amendments to local land use and zoning codes, building codes, housing codes, subdivisions and other codes and adopting more stringent NFIP requirements on a local level.
- Communication and education programs aimed at achieving no flood risk.

Hydrologic and Economic Evaluation of the NED TSP

Hydrologic and economic models were run to determine the inundation effects of storms on residential, commercial, and industrial properties in the study area. Hydrologic modeling provided the existing and future hydrologic conditions needed to assess storm surge-related damages. The modeling identified 90 hydrologic reaches which are characterized by unique relationships between storm surge elevations and frequency. (Figure 1) An inventory of structure values, types, and first floor elevations was compiled for all structures in the 90 reaches which identified approximately 52,000 structures. Approximately 49,321 structures are located within the 100-year (1% ACE) floodplain and the results of storm surge modeling, a flood damage analysis model was used to estimate economic damages under the "No-Action" alternative and the potential benefits resulting from the implementation of nonstructural measures.

The TSP contained in the December 2013 draft report recommended nonstructural measures for residential and non-residential structures in the 100-year (1% ACE) floodplain within 11 justified reaches. The NED TSP has been substantially revised using the 2025 conditions as the base flood criteria instead of 2075 conditions and properties in the 0-25-year (0-4% ACE) floodplain. The new NED TSP provides for greater net benefits and addresses the structures in most immediate need of flood damage reduction (Figure 2). Further analysis is required to refine the estimate of future without-project damages to account for reasonably expected future changes to the floodplain inventory resulting from severe and/or repetitive flooding.

The economic evaluation employed several assumptions regarding the nonstructural action to be taken for any given structure. Residential structures with first-floor elevations below the 2025 25-year (4% ACE) water surface elevation (BFE) were eligible to be raised to the year 2075 100-year (1% ACE) BFE. This evaluation was incrementalized by also evaluating the structures within the 25-50 year (4-2% ACE) floodplain and the 50-100 year (2-1% ACE) floodplain. This measure requires lifting the entire structure or the habitable area to the predicted 2075, 100-year base flood elevation unless the required elevation is greater than a maximum of 13 feet above ground level. Velocity and hydrodynamic forces of storm surge and flooding also have to be considered. The most common methods of elevation are: (1) elevating on open foundations such as piers, columns, posts, or piles; (2) elevating on continuous foundation walls; (3) elevating by extending the walls or by moving the living space to an upper floor; and (4) elevating on fill. Eligible structures will be elevated to meet the predicted 2075 100-year base flood elevation, so that the habitable floors are raised to levels which will protect the residential structures from storm surge flooding to reduce future losses by allowing the free movement of floodwaters beneath and around the raised structures. Residential structures that are eligible for elevation (and the owners of such properties willing to participate) must meet the following eligibility criteria:

1. The property owner is willing to participate in the Nonstructural Program; and
2. The structure is in a condition fit for human habitation; and
3. The structure complies with the building code and floodplain management codes under which the structure was originally permitted; and
4. Based on a visual assessment, the structure is not in a substantially deteriorated, decaying, damaged or defective condition; and
5. Based on a visual assessment, the structure does not have signs of actual or potential structural defects, distress, or failure (i.e., no evidence of corrosion of steel framing or concrete; no water or insect damage to wood framing; no framing that is in obvious need of repair or replacement, no settlement, cracking, buckling, or collapse of the foundation; no damage to load bearing or masonry walls; no damage to veneer or siding, no evidence of unrepaired roof leaks, etc.); and
6. The property owner does not owe taxes or other debts to any state or local governmental entity or to the Federal government; and
7. The property is not in violation of the current building code or other local laws and ordinances; and
8. The property is located in a community that participates in the National Flood Insurance Program and the property owner has a current Elevation Certificate; and
9. The property owner has not previously received any disaster assistance for the elevation of the structure; and
10. The structure and/or land on which it is located is not contaminated with hazardous or toxic waste or materials; and
11. The property owner is willing to expend the costs that may be necessary in connection with the elevation of the structure but which are not costs that are covered by the Program (i.e., temporary relocation and storage costs; the costs of accessibility improvements such as elevators and ramps to accommodate persons with disabilities; costs for additional work that may be required to bring the structure into compliance with current building code and/or other applicable codes); and
12. The structure can be elevated to meet the Base Flood Elevation as stated in the community's Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS), *OR* the Advisory Base Flood Elevation, whichever is higher, so that the habitable floors are raised to levels which will protect the residential structures from storm surge flooding to reduce future losses from the likelihood of the

100-Year Flood Event to the extent practicable but in no event will a structure be raised greater than 13 ft above the ground level, National Geodetic Vertical Datum; and

13. The property has apparent clear title; and
14. The property owner is willing to enter into a Flood Proofing Agreement and execute the Residential Structure Elevation Covenant Running with the Land; and
15. There are no special considerations or unique circumstances which prohibit elevation.

Note: Eligibility criteria remain under development and will be refined prior to implementation of the Plan.

Non-residential structures with first-floor elevations below the 2025 25-year BFE were considered for dry flood proofing to a maximum of three feet above the ground. Dry flood proofing consists of sealing all areas below the flood protection level of a structure to make it watertight and ensure that floodwaters cannot get inside by making walls, doors, windows and other opening impermeable to water penetration. Walls are coated with sealants, waterproofing compounds, or plastic sheeting is placed around the walls and covered, and back-flow from water and sewer lines prevention mechanisms such as drain plugs, standpipes, grinder pumps and back-up valves are installed. Openings, such as doors, windows, sewer lines and vents, may also be closed temporarily, with sandbags or removable closures, or permanently. Dry flood proofing achieves flood risk reduction but it is not recognized by the NFIP for any flood insurance premium rate reduction when applied to residential structures, and may not be used under the NFIP for new or substantially damaged buildings located in; a Special Flood Hazard Area. Based upon National Flood Proof Committee sponsored tests at the Engineering Research and Development Center, a "conventional" built structure can generally only be dry flood proofed up to 3 feet on the walls. A structural analysis of the wall strength is required to achieve higher protection. Closure panels may be used at openings. This measure is viable for appropriate structures in the study area if design flood depths are generally less than three feet, and hydrodynamic forces would also be a consideration. For structures with crawlspaces, the only effective way to dry flood proof is to make the first floor impermeable to the passage of floodwater. Dry flood proofing consists of activities to modify structures, their sites or contents to keep water out or to reduce the damage caused by water entry. Dry flood proofing consists of activities designed to keep water out of a structure (i.e., the inside stays dry). Some common flood proofing measures include:

- Backflow valves;
- Closures on doors, windows, stairwells and vents--they may be temporary or permanent;
- Elevating structures via landfill, walls, posts, piers, jacks and beams;
- Rearranging or protecting damageable property--e.g., relocate or raise utilities;
- Ring walls and small berms with a maximum height of less than 6 feet constructed around structures and utilities;
- Sump pumps and sub-drains;
- Water resistant material; metal windows, doors and jambs; waterproof adhesives; sealants and floor drains.

Dry flood proofing is not recommended for flood heights above three feet, due to hydrostatic pressure (USACE, 1993). Within the Project area, each non-residential structure that is located within the 2025 0-25-year floodplain is subject to flood proofing.

In addition, the construction of small berms and floodwalls comprised of earth, concrete, masonry or steel and placed were considered for placement around a single structure or a small group of structures. It should be noted that some local governments may have adopted floodplain management rules that exceed the minimum requirements of the NFIP, and may limit the ability of certain flood-proofing measures to be constructed if effects of the flood-proofing measure (i.e., small berms, barriers, or floodwalls) create the potential for drainage problems by displacing flood storage, elevating buildings on fill, requiring significant tree removal, etc.

Project costs and benefits were calculated on the basis of voluntary participation in the nonstructural plan unless certain criteria were met for a given structure. However, should participation be less than 100%, then both benefits and costs are expected to decline in similar proportion such that the benefit/cost ratio would remain unchanged for this plan. In addition, due to the lack of any economically justified structural alternatives there are no viable options to achieve greater positive net benefits.
The following administrative measures were also considered for inclusion in the NED TSP:

Flood Warning Flood Preparedness, Flood Response & Evacuation Plans. All of the nonstructural measures with the exception of buyouts and relocations require the development and implementation of flood warning, flood preparedness and flood response and evacuation plans. The development of these plans requires the installation of pertinent equipment necessary for the operation of the plans such as data gathering devices (rain gages and stream gages) and data processing equipment (computer hardware and software). A Flood Warning and Emergency Evacuation Plan that considers the capabilities of the National Weather Service; USACE; Federal, State and local emergency services agencies; rainfall recording systems; stream data gages; evacuation routes; temporary relocation shelters; coordinated police, fire and public works departments; and the integration of the entire system can be developed to provide an efficient and effective response to future floods and their associated damage with or without a Nonstructural Plan being implemented. Identification of evacuation routes and shelters and preparation of inundation mapping depicting the various frequency levels of flooding throughout the Project area may be required. Components of a Flood Warning and Emergency Evacuation Plan can include: (1) Preparedness (identification of activities required prior to a flood event to ensure participants are at a sufficient level of readiness), (2) Flood Threat Recognition (procedures to guide parish officials in defining the appropriate level of flood threat and selection of the appropriate emergency response option), (3) Warning Dissemination (procedures to notify everyone involved in responding to a flood event of the level of the threat, and the need for implementation of emergency response activities), (4) Emergency Response Actions (delineation of emergency response actions for implementation, specification of general guidelines for selection of emergency response action(s), and determination of the organizational structure and procedures for implementation of each potential emergency response action), and (5) Post-Flood Recovery/Reoccupation (identification of activities to assure an orderly and timely reestablishment of pre-flood condition, to the extent possible).

Floodplain Management Plans. The NFS is required to prepare a Floodplain Management Plan (FPMP) in coordination with USACE to maintain the integrity of the USACE Project. The NFS should use best efforts to work with the governing bodies within the three parishes to ensure consistency with local development plans and regulations across the Study Area. If the FPMP is prepared during the feasibility phase of the study, the costs of preparing the FPMP can be cost-shared on the same basis as the feasibility study. By integrating the FPMP with the feasibility study, both the FPMP and the ultimate project are bettered, and therefore it is recommended that the FPMP be prepared within this Feasibility Study.

Communication and Education Programs to Reduce Flood Risk. Communication and education concerning flood risk is extremely vital and must be done on a continuous basis. Communication and education programs must cover all entities within the study area. At a minimum, annual emergency drills and testing of flood warning equipment must occur. Structure owners within a floodplain should have a flood emergency/response plans in practice. The essence of any communication and education program should focus on achieving a "No Flood Risk" environment by making residents, businesses and property owners consider how their decision-making will impact the goal of eliminating flood risk to their property and community.

Floodplain Regulation and Floodplain Management. Floodplain regulation and floodplain management are based in the NFIP which requires minimum standards of floodplain management and floodplain regulation for participating communities including all those within the SWC Study Area. Nevertheless, the minimum standards of the NFIP have proven to be inadequate in reducing flood risk and flood damage since flood risk and damage has increased during the 45+ years since the NFIP was established. The NFIP standards are too

low and development in high flood risk areas continues. Therefore, communities within the Study Area should be encouraged to adopt stricter floodplain management requirements at the local level.

Land Use Regulations. (local building, land use & zoning, subdivision and housing codes). Local governments within the floodplain should be encouraged to adopt land use regulations aimed at reducing flood risk and flood damage such as restrictions on where new development may occur, minimum elevations for habitable first floors, requiring suitable anchorage to prevent flotation of buildings during floods; establishing minimum protection elevations for the first floors of structures; requiring electrical outlets and mechanical equipment to be above regulatory flood levels or be appropriately flood-proofed; restricting the use of materials that deteriorate when wetted; requiring adequate structural designs that can withstand the effects of water pressure and flood velocities; requiring the repair of flood- damaged structures in a manner that will ensure the safety of occupants and prevent blight .

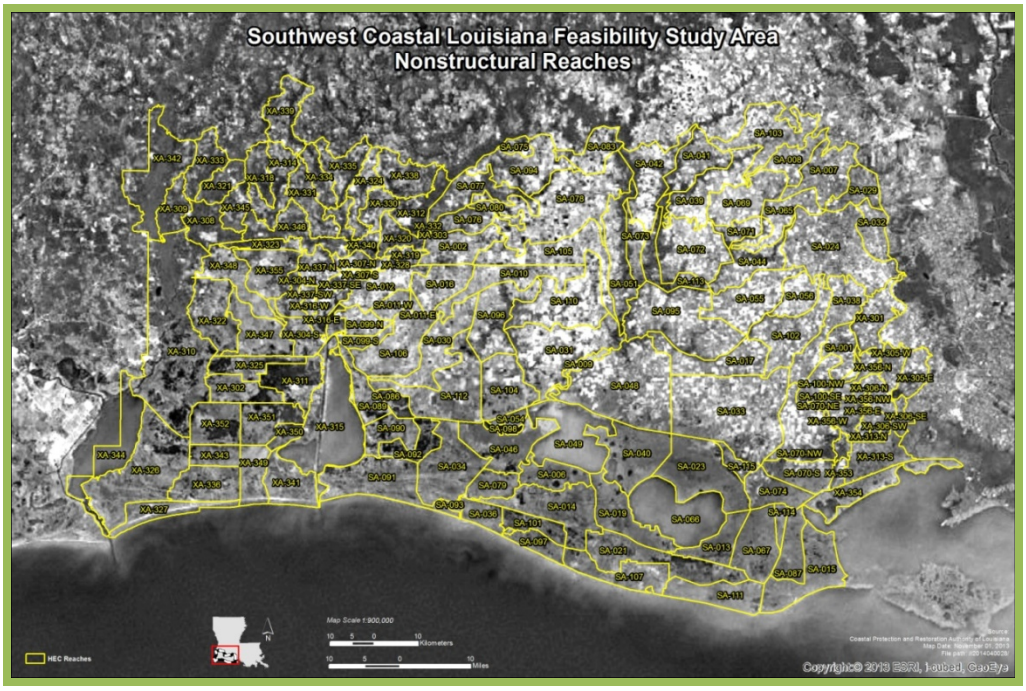

Figure 1: Hydrologic reaches in the study area.

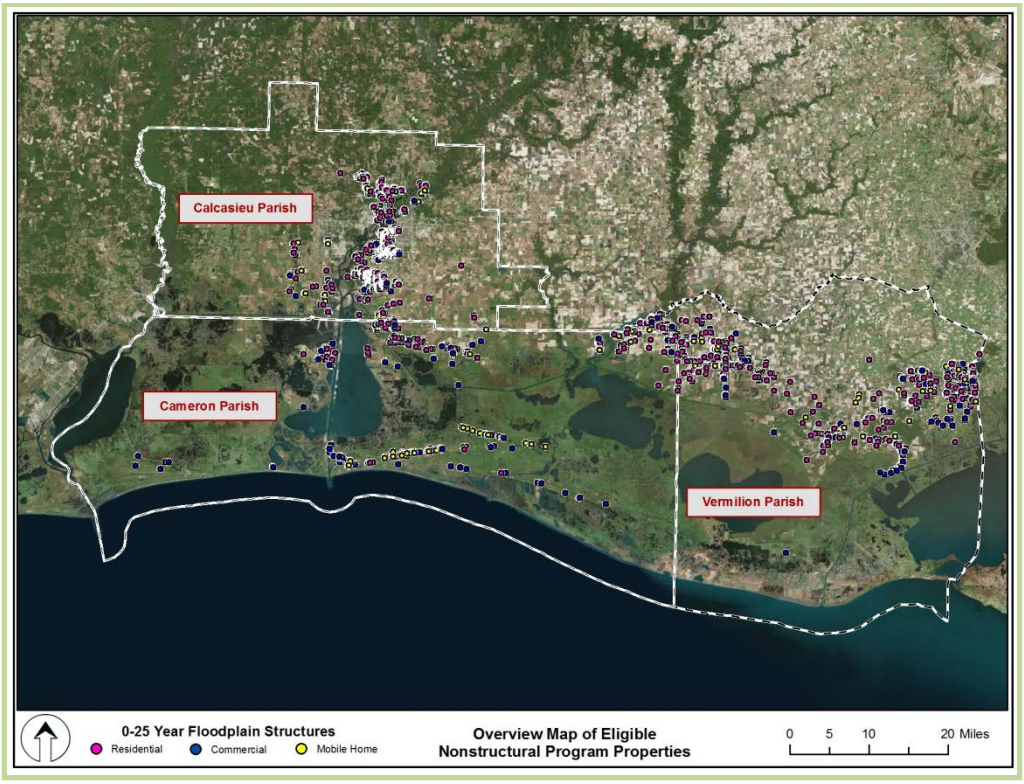

Figure 2. Eligible structures in the 0-25-year floodplain

The expected annual benefits for addressing all the structures within the 0-25 year (0-4% ACE) floodplain are approximately $266 million. The total cost for implementing the nonstructural alternative throughout the study area is slightly over $824 million and the corresponding average annual cost is approximately $34.3 million. USACE will continue to refine the TSP analyses relating to environmental justice and community cohesion. In addition, the requirements of Executive Order 12898 will be fully incorporated.

The National Ecosystem Restoration (NER) Plan

The NER TSP (Alternative CM-4) consists of a broad range of ecosystem restoration measures including marsh restoration features (which involves hydraulic dredging and placing of sediments), a hydrology and salinity control structure, shoreline protection/stabilization features, and chenier reforestation. The Calcasieu Ship Channel Salinity Barrier Navigation Study is also recommended as an additional long-range study feature to adequately account for potential environmental benefits, navigation impacts, and engineering. The NER TSP features comprise an integrated comprehensive restoration plan that would have synergy with other ecosystem restoration projects and would facilitate hydrologic and geomorphic stability and resilience. The NER TSP is comprised of the following ecosystem restoration measure types:

- 9 Marsh Restoration areas,
- 35 Chenier reforestation locations,
- 5 shoreline protection projects
- 1 hydrologic/salinity control feature

Table 1 displays the categories, feature number and description of ecosystem restoration features and estimated net AAHUs (Note: this table is a compilation of other tables in the revised draft PEIS).

Table 1. Tentatively Selected Plan Ecosystem Restoration (NER) Features.

Basin	Category	Feature	Description	Net AAHUs
Mermentau/Teche-Vermilion	Marsh Restoration	47a1	Marsh restoration using dredged material south of LA-82, about 4.5 miles west of Grand Chenier. 933 marsh acres would be restored and 88 acres would be nourished from 3M cubic yards of dredged material with one renourishment cycle.	272
		47a2	Marsh restoration using dredged material south of LA-82, approximately 4.5 miles west of Grand Chenier. 1,297 marsh acres would be restored and 126 acres would be nourished from 8.8M cubic yards of dredged material with one renourishment cycle.	381
		47c1	Marsh restoration using dredged material south of LA-82, approximately 4.5 miles west of Grand Chenier. 1,304 marsh acres would be restored and 4 acres would be nourished from 8.6M cubic yards of dredged material with one renourishment cycle.	353
		127c3	Marsh restoration at Pecan Island, west of the Freshwater Bayou Canal and approximately 5 miles north of the Freshwater Bayou locks. 832 marsh acres would be restored and 62 acres would be nourished from 7.3M cubic yards of dredged material with one renourishment cycle.	241
		306a1	Rainey marsh restoration at Christian Marsh, east of the Freshwater Bayou Canal and approximately 5 miles north of the Freshwater Bayou locks. 627 marsh acres would be restored and 1,269 acres would be nourished from 8.1M cubic yards of dredged material with one renourishment cycle.	645
	Shoreline Protection/ Stabilization	6b1	Gulf shore protection/stabilization from Calcasieu River to Freshwater Bayou. 11.1 miles of Gulf shore protection consisting of a reef breakwater with a lightweight aggregate core. Located ~150 ft offshore consisting of geotextile fabric and stone built to an 18 ft crest width.	625
		6b2	Gulf shore protection/stabilization from Calcasieu River to Freshwater Bayou. 8.1 miles of Gulf shoreline protection consisting of a reef breakwater with a lightweight aggregate core. Located ~150 ft offshore using geotextile fabric and stone built to an 18 ft crest width.	466
		6b3	Gulf shore protection/stabilization from Calcasieu River to Freshwater Bayou. 7.2 miles of Gulf shoreline protection consisting of a reef breakwater with a lightweight aggregate core. Located ~150 ft offshore using geotextile fabric and stone built to an 18 ft crest width.	312
		16b	Fortify spoil banks of Freshwater Bayou. Approximately 15.4 miles of rock revetment at three critical locations to prevent shoreline breaching. Rock revetment would be built to +4 ft with a 4 ft crown. Two maintenance lifts would be required.	156
	Chenier Reforestation	CR	13 separate chenier locations would be replanted. Approximately 435 seedlings per acre, at 10 ft x 10 ft spacing, with invasive species control incorporated.	96
Calcasieu/ Sabine	Hydrologic/ Salinity Control	74a*	Cameron-Creole Spillway. Located at the breach in the levee south of Lambert Bayou this canal would act as a drainage manifold. The outfall channel into Calcasieu Lake would rock-lined for scour protection and built to +4 ft.	267
	Marsh Restoration	3a1	Beneficial use of dredged material from the Calcasieu Ship Channel. Located adjacent to the south shore of the GIWW west of the Calcasieu Ship Channel near Black Lake. Restore 599 marsh acres with 5.3M cubic yards of dredged material with one renourishment cycle.	191
		3c1	Beneficial use of dredged material from the Calcasieu Ship Channel. Located adjacent to the eastern rim of Calcasieu Lake and situated within the Cameron-Creole Watershed area. 1,765 marsh acres would be restored and 450 acres would	654

Basin	Category	Feature	Description	Net AAHUs
			be nourished from 10.2M cubic yards of dredged material with one renourishment cycle.	
		124c	Marsh restoration at Mud Lake. Located adjacent and north of Highway 82 and east of Mud Lake. 1,908 marsh acres would be restored and 734 acres would be nourished from 11.1M cubic yards of dredged material with one renourishment cycle.	740
		124d	Marsh restoration at Mud Lake. Located west of the Calcasieu Ship Channel and adjacent to the south rim of West Cove. 159 marsh acres would be restored and 448 acres would be nourished from 1.4M cubic yards of dredged material with one renourishment cycle.	4
	Shoreline Protection/ Stabilization	5a	Holly Beach Shoreline Stabilization Breakwaters. Construction of 8.7 miles of rock and low action breakwaters and is a continuation of existing breakwaters. Crown elevation of +1.5 ft with a crown width of 30 ft. Two maintenance lifts would be required.	56
	Chenier Reforestation	CR	22 separate chenier locations would be replanted. Approximately 435 seedlings per acre, at 10 ft x 10 ft spacing, with invasive species control incorporated.	441.8
	TOTALS			5,901

* The Master Plan model used to evaluate hydro/salinity measure #74a needs additional refinement to properly evaluate the benefits of 74a. Feature 74a is programmatic and additional NEPA will be prepared prior to implementation

The NER Plan with the full benefits of all feature types is displayed in Table 2

Table 2: NER Plan Features.

Restoration Measure	# of Features	Net Benefits	AAHUs	Parishes	Initial Cost
Marsh Restoration	9	8,714	3,481	Calcasieu, Cameron, Vermilion	$572,300,000
Hydrology/Salinity Control	1	(56)	267	Cameron	$4,330,000
Shoreline Protection/Stabilization	5	5,509	1,615	Cameron, Vermilion	$256,085,000
Chenier Reforestation	35	1,413	538	Cameron, Vermilion	$250,000
Total	**51***	**15,580**	**5,901**	**---**	**~$987,738,000**

* *The Calcasieu Ship Channel Salinity Barrier is recommended for additional study. The Hydrology/Salinity Control Measure requires additional analysis to understand impacts and benefits.*

Each of the marsh restoration features involves delivering sediments to open water or eroding marsh areas (minimum of 100 acres) that have water levels of less than two feet and that have been optimized to preserve or restore critical geomorphologic features to create new vegetated wetlands. The marsh restoration locations include: (a) three areas on the south side of LA-82 approximately 4.5 miles west of Grand Chenier; (b) Pecan Island west of the Freshwater Bayou Canal approximately 5 miles north of the Freshwater Bayou locks; (c) Christian Marsh located east of Freshwater Bayou Canal and approximately 5 miles north of Freshwater Bayou locks; (d) southern shoreline of GIWW west of Calcasieu Ship Channel near Black Lake; (e) eastern

rim of Calcasieu Lake within the Cameron-Creole Watershed; (f) east of Mud Lake and north of Highway 82; (g) Mud Lake west of Calcasieu Ship Channel adjacent to southern rim of West Cove. Dredged material sources would be the Calcasieu Ship Channel and the Gulf of Mexico. All marsh restoration locations would have one future re-nourishment cycle. A 30-year renourishment interval was chosen as the best balance between cost, net acres, and AAHUs. The costs are included in the OMRR&R estimates and would be the responsibility of the Non-Federal Sponsor. Adaptive management, based on monitoring, would be used to adjust the projected interval, either sooner or later than the 30-years, based on actual loss rates after construction.

The hydrologic and salinity control feature consists of the Cameron-Creole Spillway structure south of Lambert Bayou, would serve as a drainage manifold and the outfall channel into Calcasieu Lake, and would be rock-lined for scour protection and built to +2 feet. This feature is designed to regulate the flow of water in certain areas, to inhibit salinity intrusion above a certain threshold, and to increase wetland productivity.

The five shoreline protection/stabilization features, which span approximately 252,000 linear feet, would be used to reduce erosion of canal banks and shorelines in critical areas in order to protect adjacent wetlands and critical geomorphic features.

Chenier restoration consists of replanting with 435 seedlings per acre at 10' x 10' spacing, in 35 chenier locations on over 1,400 acres in Cameron and Vermilion parishes. Areas eligible for chenier restoration consist of areas greater than five feet in elevation and with low shoreline erosion rates, provided the existing canopy coverage is less than 50% unless nearby development would prevent achieving study objectives.

Figure 3 and 4depict the NER TSP features.

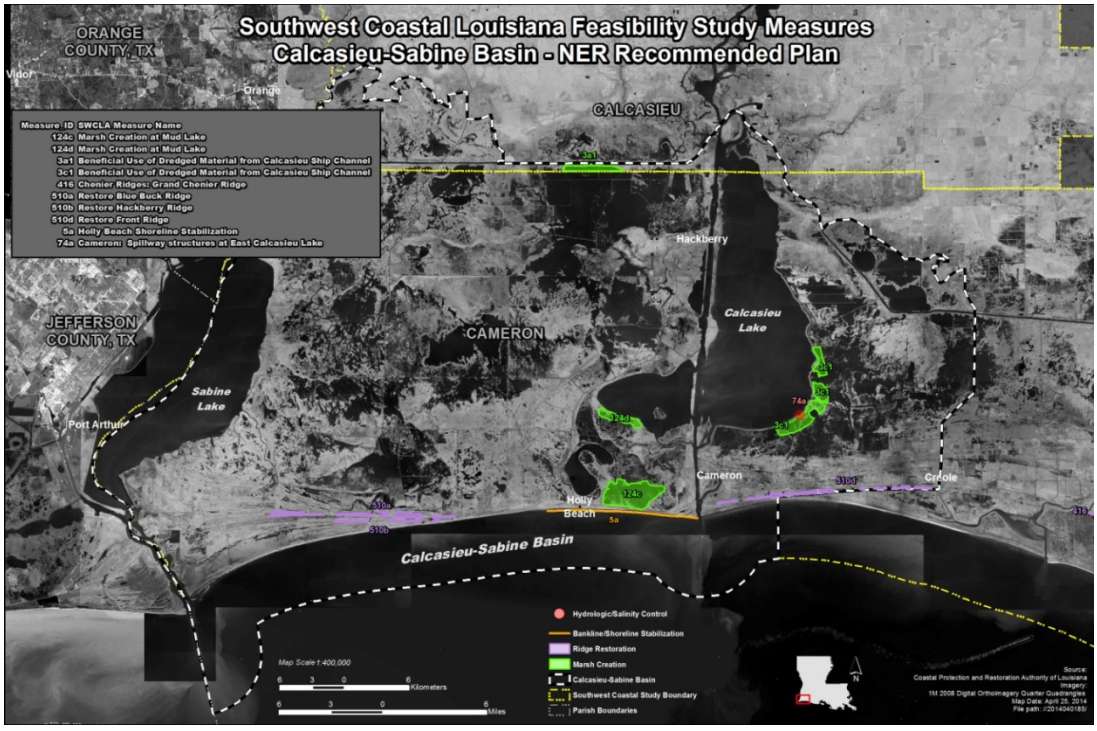

Figure 3: NER recommended plan features (Calcasieu-Sabine Basin).

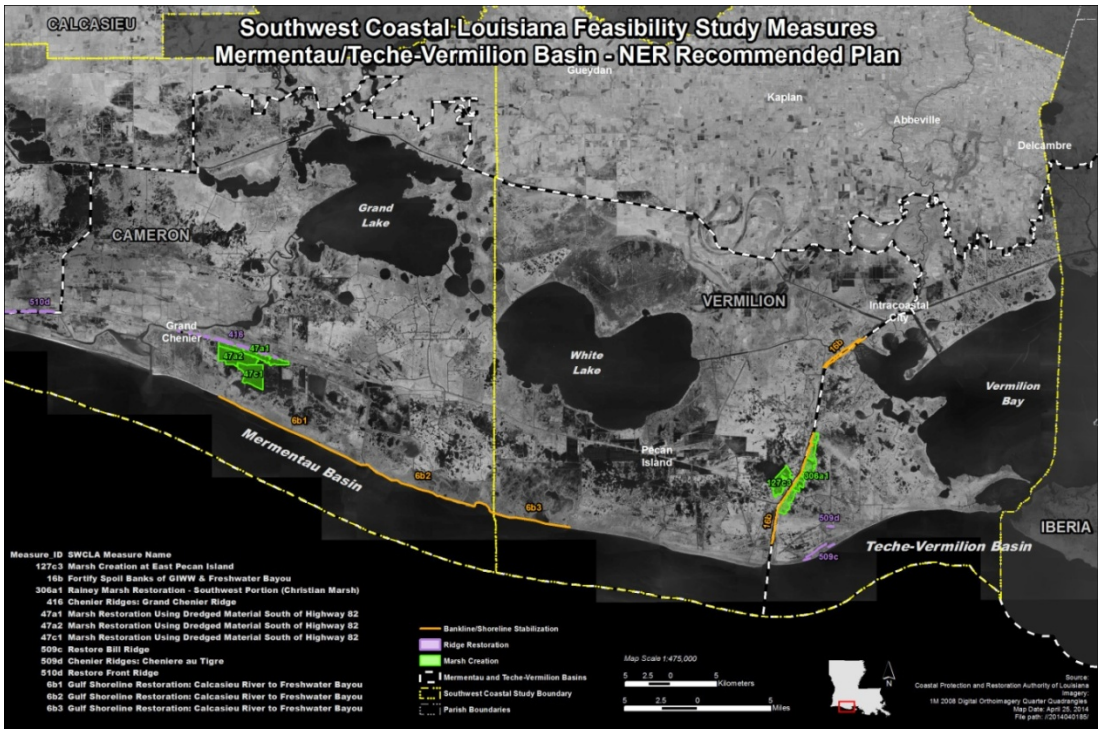

Figure 4 NER recommended plan features (Mermentau/Teche-Vermilion Basin).

The specific details of each feature in the NER TSP are listed in Table 3

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Table 3. Details of the Marsh Restoration features of the TSP

Measure Number	Measure Name	Basin	Marsh Type	Acres Created	Acres Nourished	Total Acres	Net Benefits (acres)	Benefits (AAHU)	Borrow Volume (cy)	Borrow Area (acres)	Renourishment Volume (cy)
3a1	Beneficial Use of Dredged Material from Calcasieu Ship Channel	Calcasieu	Brackish	599	0	599	454	191	5,339,286	139	1,000,000
3c1	Beneficial Use of Dredged Material from Calcasieu Ship Channel	Calcasieu	Brackish	1,765	450	2,215	1,451	654	10,199,098	314	5,600,000
47a1	Marsh Restoration Using Dredged Material South of Highway 82	Mermentau	Brackish	88	933	1,021	895	272	3,022,782	1,716	1,500,000
47a2	Marsh Restoration Using Dredged Material South of Highway 82	Mermentau	Brackish	1,297	126	1,423	1,218	381	8,831,084	1,716	1,500,000
47c1	Marsh Restoration Using Dredged Material South of Highway 82	Mermentau	Brackish	1,304	4	1,308	1,135	353	8,557,120	1,716	1,800,000
124c	Marsh Creation at Mud Lake	Calcasieu	Saline	1,908	734	2,642	1,915	740	11,129,437	531	4,700,000
124d	Marsh Creation at Mud Lake	Calcasieu	Brackish	159	448	607	168	4	1,420,943	378	1,200,000
127c3	Marsh Restoration at Pecan Island	Mermentau	Brackish	832	62	894	735	241	7,301,057	3,950	781,000
306a1	Rainey Marsh Restoration Southwest Portion (Christian Marsh)	Mermentau	Brackish	627	1,269	1,896	743	645	8,128,181	3,950	3,500,000
	Totals			9,424	3,181	12,605	8,714	3,481	63,928,988	7,028	21,581,000

Measure Number	Measure Name	State Water Bottoms (permanent)	Footprint (acres)	Disposal Footprint (acres)	Dike Footprint (feet)	Dike Footprint (acres)	State Water Bottoms (temporary)	Dredge Pipeline Route (ft)	Dredge Pipeline Route (acres)	Piping Plover Critical Habitat (acres)
3a1	Beneficial Use of Dredged Material from Calcasieu Ship Channel	139	132	0	44,700	30.8	0	43,942	30	0
3c1	Beneficial Use of Dredged Material from Calcasieu Ship Channel	314	182	0	92,500	63.7	0	61,497	42	0
47a1	Marsh Restoration Using Dredged Material South of Highway 82	1,716	47	0	68,300	47.0	0	35,519	24	0.14
47a2	Marsh Restoration Using Dredged Material South of Highway 82	1,716	47	0	41,000	28.2	0	30,898	21	0.14
47c1	Marsh Restoration Using Dredged Material South of Highway 82	1,716	47	0	35,200	24.2	0	29,858	21	0.14
124c	Marsh Creation at Mud Lake	531	30	0	52,600	36.2	0	10,836	7	0.34
124d	Marsh Creation at Mud Lake	314	182	0	32,500	22.4	0	21,452	15	0
127c3	Marsh Restoration at Pecan Island	3,950	110	0	46,000	31.7	0	37,074	26	0
306a1	Rainey Marsh Restoration Southwest Portion (Christian Marsh)	3,950	178	0	108,000	74.4	0	59,731	41	0
	Totals	14,346	955	0	520,800	358.7	0	330,807	227	1

Table 3 Details of the Shoreline Protection features of the TSP

Measure Number	Measure Name	Basin	Marsh Type	Net Benefits (acres)	Benefits (AAHU)	Shoreline Feature Length (ft)	Rock (tons)	Grade Rock (lbs)	Geotextile Fabric (sq yds)	Lightweight Aggregate (tons)	1st Maintenance Lift (tons)	2nd Maintenance Lift (tons)
5a	Holly Beach Shoreline Stabilization – Breakwaters	Calcasieu	Saline	26	56	46,014	860,540	250	386,460	0	129,081	86,054
6b1	Gulf Shoreline Restoration: Calcasieu River to Freshwater Bayou	Mermentau	Brackish	2,140	625	58,293	868,480	250	447,830	479,150	86,848	0
6b2	Gulf Shoreline Restoration: Calcasieu River to Freshwater Bayou	Mermentau	Brackish	1,583	466	42,883	687,140	250	363,270	357,010	68,714	0
6b3	Gulf Shoreline Restoration: Calcasieu River to Freshwater Bayou	Mermentau	Brackish	1,098	312	33,355	561,530	250	244,205	279,030	56,153	0
16b	Fortify Spoil Banks of the GIWW and Freshwater Bayou	Mermentau	Brackish	662	156	70,983	617,640	250	516,860	0	92,646	61,764
	Totals			5,509	1,615	251,528	3,595,330		1,958,625	1,115,190	433,442	147,818

Measure Number	Measure Name	State Water Bottoms (permanent)	Breakwater Footprint	Floatation Footprint (acres)	Disposal Footprint (acres)	State Water Bottoms (temporary)	Critical Habitat (acres)	Staging Area (acres)	Crown Elevation (feet NAVD88)	Crown Width (feet)	Slopes	Aprons
5a	Holly Beach Shoreline Stabilization – Breakwaters	57.4	57.4	479	462	941	0	0	3.50	24	2:1	10-ft front & 6-ft back
6b1	Gulf Shoreline Restoration: Calcasieu River to Freshwater Bayou	65.9	65.9	725	711	1436	0	21	3.25	18	2:1	10-ft front & 6-ft back

Measure Number	Measure Name	State Water Bottoms (permanent)	Breakwater Footprint	Floatation Footprint (acres)	Disposal Footprint (acres)	State Water Bottoms (temporary)	Critical Habitat (acres)	Staging Area (acres)	Crown Elevation (feet NAVD88)	Crown Width (feet)	Slopes	Aprons
6b2	Gulf Shoreline Restoration: Calcasieu River to Freshwater Bayou	40.2	40.2	507	497	1,004	0	21	3.25	18	2:1	10-ft front & 6-ft back
6b3	Gulf Shoreline Restoration: Calcasieu River to Freshwater Bayou	37.8	37.8	372	289	661	0	21	3.25	18	2:1	10-ft front & 6-ft back
16b	Fortify Spoil Banks of the GIWW and Freshwater Bayou	77.1	77.1	358	0	0	0	0	3.00	4	4:1	none
	Totals	278.4	278.4	2,441	1,959	4,042	0	63				

Table 3. Details of the Hydrologic & Salinity Control features of the TSP

Measure Number	Measure Name	Basin	Marsh Type	Net Benefits (acres)	Benefits (AAHU)	Area of Influence (acres)	Rock (tons)	Grade Rock (lbs)	Geotextile Fabric (sq yds)	Floatation Footprint (acres)	Disposal Footprint (acres)	State Water Bottoms (Permanent)	State Water Bottoms (Temporary)	Critical Habitat (acres)	Staging Area (acres)
74a	Cameron Spillway Structure at East Calcasieu Lake	Calcasieu	Brackish	-56*	267*	6,651	47,800	250	13,600	104	104	3	104	0	0

* The Master Plan model used to evaluate hydro/salinity measure #74a needs additional refinement to properly evaluate the benefits over the 6,651-acre area of influence.

Table 3. Details of the Chenier Reforestation features of the TSP

Measure Number	Measure Name	Net Benefits (acres)	Benefits (AAHU)	Species	Total Fence Length (feet)	Fence Height (feet)	Planting Density (#/acre)	Spacing (feet)	Survival (percent)	Equipment Access Corridor (feet)	Equipment Access Corridor (acres)	State Water Bottoms (permanent)	State Water Bottoms (temporary)	Critical Habitat (acres)	Staging Area (acres)
CR (total)	Chenier Reforestation	1,413	538	Live Oak; Hackberry	150,000	7.5	435	10 x 10	57%	13,867	10	0	0	0	0

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO

LOUISIANA COASTAL USE GUIDELINES

1. GUIDELINES APPLICABLE TO ALL USES

These and the following responses are programmatic in nature for the NED component and would be followed by more detailed analysis in subsequent NEPA documents and associated consistency determination(s). The responses applicable to the revised NER plan are at full feasibility level with no additional NEPA anticipated except for the hydro/salinity structure 74a which requires further analysis.

Guideline 1.1 The guidelines must be read in their entirety. Any proposed use may be subject to the requirements of more than one guideline or section of guidelines and all applicable guidelines must be complied with.

Response: Acknowledged.

Guideline 1.2 Conformance with applicable water and air quality laws, standards and regulations, and with those other laws, standards and regulations which have been incorporated into the coastal resources program shall be deemed in conformance with the program except to the extent that these guidelines would impose additional requirements.

Response: Acknowledged.

Guideline 1.3 The guidelines include both general provisions applicable to all uses and specific provisions applicable only to certain types of uses. The general guidelines apply in all situations.

The specific guidelines apply only to the situations they address. Specific and general guidelines should be interpreted to be consistent with each other. In the event there is an inconsistency, the specific should prevail.

Response: Acknowledged.

Guideline 1.4 These guidelines are not intended to nor shall they be interpreted so as to result in an involuntary acquisition or taking of property.

Response: No involuntary acquisition would be required for the proposed action.

Guideline 1.5 No use or activity shall be carried out or conducted in such a manner as to constitute a violation of the terms of a grant or donation of any lands or water-bottoms to the State or any subdivision thereof. Revocations of such grants and donations shall be avoided.

Response: No violations or revocations of such grants or donations are expected.

Guideline 1.6 Information regarding the following general factors shall be utilized by the permitting authority in evaluating whether the proposed use is in compliance with the guidelines.

a) type, nature and location of use.

Response: Acknowledged.

b) elevation, soil and water conditions and flood and storm hazard characteristics of site.

Response: Acknowledged.

c) techniques and materials used in construction, operations and maintenance of use.

Response: Acknowledged.

d) existing drainage patterns and water regimes of surrounding area including flow, circulation, quality, quantity and salinity; and impacts on them.

Response: Acknowledged.

e) availability of feasible alternative sites or methods – for implementing the use.

Response: Acknowledged.

f) designation of the area for certain uses as part of a local program.

Response: Acknowledged.

g) economic need for use and extent of impacts of use on economy of locality.

Response: Acknowledged.

h) extent of resulting public and private benefits.

Response: Acknowledged.

i) extent of coastal water dependency of the use.

Response: Acknowledged.

j) existence of necessary infrastructure to support the use and public costs resulting from use.

Response: Acknowledged.

k) extent of impacts on existing and traditional uses of the area and on future uses for which the area is suited.

Response: Acknowledged.

l) proximity to, and extent of impacts on important natural features such as beaches, barrier islands, tidal passes, wildlife and aquatic habitats, and forest lands.

Response: Acknowledged.

m) the extent to which regional, state and national interests are served including the national interest in resources and the siting of facilities in the coastal zones as identified in the coastal resources program.

Response: Acknowledged.

n) proximity to, and extent of impacts on, special areas, particular areas, or other areas of particular concern of the state program or local programs.

Response: Acknowledged.

o) likelihood of, and extent of impacts of, resulting secondary impacts and cumulative impacts.

Response: Acknowledged.

p) proximity to and extent of impacts on public lands or works, or historic, recreational or cultural resources.

Response: Acknowledged.

q) extent of impacts on navigation, fishing, public access, and recreational opportunities.

Response: Acknowledged.

r) extent of compatibility with natural and cultural setting.

Response: Acknowledged.

s) extent of long term benefits or adverse impacts.

Response: Acknowledged.

Guideline 1.7 It is the policy of the coastal resources program to avoid the following adverse impacts. To this end, all uses and activities shall be planned, sited, designed, constructed, operated and maintained to avoid to the maximum extent practicable significant:

a) reductions in the natural supply of sediment and nutrients to the coastal system by alterations of freshwater flow.

Response: Acknowledged.

b) adverse economic impacts on the locality of the use and affected governmental bodies.

Response: The proposed action is not expected to have any adverse economic impacts on the locality of the use or on nearby governmental bodies. No industries, jobs, or other economic activities would be adversely impacted by the proposed action. Rather, the NED proposed action would provide hurricane and storm damage risk reduction thereby reducing the adverse economic impacts of hurricane and storm damage.

c) detrimental discharges of inorganic nutrient compounds into coastal waters.

Response: No detrimental discharges of inorganic nutrient compounds would occur.

d) alterations in the natural concentration of oxygen in coastal waters.

Response: There may be a temporary decrease in the dissolved oxygen concentrations during actual construction operations, as well as for a short time thereafter. Any effects are expected to be minor and would occur only during actual dredging activities. Dissolved oxygen levels would return to ambient levels following construction operations. Best management practices would be utilized to avoid and minimize any such impacts.

e) destruction or adverse alterations of streams, wetland, tidal passes, inshore waters and water bottoms, beaches, dunes, barrier islands, and other natural biologically valuable areas or protective coastal features.

Response: No adverse alterations of water bodies would result from the proposed action.

f) adverse disruption of existing social patterns.

Response: Any disruptions of social patterns would be associated with construction activities, and would be of a short-term nature.

g) alterations of the natural temperature regime of coastal waters.

Response: No alterations of the natural temperature regime are expected to occur.

h) detrimental changes in existing salinity regimes.

Response: The proposed action would not alter natural salinity regimes in or around the project area.

i) detrimental changes in littoral and sediment transport processes.

Response: No detrimental changes in littoral or sediment transport processes would occur.

j) adverse effects of cumulative impacts.

Response: Cumulative impacts represent the effects of this proposed action in association with other past, present, and reasonably foreseeable future projects of similar actions. The proposed action provides beneficial environmental effects to both the human and natural resources and would not contribute to adverse effects of cumulative impacts.

k) detrimental discharges of suspended solids into coastal waters, including turbidity resulting from dredging.

Response: There would be a temporary increase in turbidity and suspended solids during construction (dredging and placement) of project features. However, any effects would be temporary and conditions would return to ambient following completion of construction activities. Best management practices would be utilized to avoid and minimize any such impacts.

l) reductions or blockage of water flow or natural circulation patterns within or into an estuarine system or a wetland forest.

Response: Reductions or blockage of water flow or natural circulation patterns is not expected to occur.

m) discharges of pathogens or toxic substances into coastal waters.

Response: There are no known toxic or pathogenic substance levels that are expected to significantly increase due to implementing the proposed action.

n) adverse alteration or destruction of archaeological, historical, or other cultural resources.

Response: Adverse alteration or destruction of cultural resources is not expected to occur.

o) fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas.

Response: Adverse impacts to wetlands would not result. As demonstrated through Wetland Value Assessments, the proposed action would improve the quality of wetlands. There would be an overall net gain of Average Annual Habitat Units (AAHUs) (see Tables 5-2a, 5-2b, 5-2c, and 5-2d).

p) adverse alteration or destruction of unique or valuable habitats, critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas, or forestlands.

Response: No unique or valuable habitats would be adversely affected.

q) adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern.

Response: No public parks, shoreline access points, public works, or designated recreation areas would be adversely altered by the proposed action.

r) adverse disruptions of coastal wildlife and fishery migratory patterns.

Response: The proposed action would not disrupt coastal wildlife or fishery migratory patterns.

s) land loss, erosion and subsidence.

Response: The proposed action would not adversely affect land loss, erosion, or subsidence.

t) increases in the potential for flood, hurricane or other storm damage, or increases in the likelihood that damage will occur from such hazards.

Response: The proposed action is not expected to increase the potential for flood, hurricane, or other storm damage, or increase the likelihood of damage from such hazards.

u) reductions in the long-term biological productivity of the coastal ecosystem.

Response: As demonstrated through Wetland Value Assessment determinations, the proposed action would improve the quality of the ecosystem in the project area. There would be an overall net gain of AAHUs (see Tables 5-2a, 5-2b, 5-2c, and 5-2d).

Guideline 1.8 In those guidelines in which the modifier "maximum extent practicable" is used, the proposed use is in compliance with the guideline if the standard modified by the term is complied with. If the modified standard is not complied with, the use will be in compliance with the guideline if the permitting authority finds, after a systematic consideration of all pertinent information regarding the use, the site and the impacts of the use as set forth in guideline 1.6, and a balancing of their relative significance, that the benefits resulting from the proposed use would clearly outweigh the adverse impacts resulting from non compliance with the modified standard and there are no feasible and practical alternative locations, methods and practices for the use that are in compliance with the modified standard and: a) significant public benefits will result from the use, or; b) the use would serve important regional, state or national interests, including the national interest in resources and the siting of facilities in the coastal zone identified in the coastal resources program, or; the use is coastal water dependent. The systematic consideration process shall also result in a determination of those conditions necessary for the use to be in compliance with the guideline. Those conditions shall assure that the use is carried out utilizing those locations, methods and practices which maximize conformance to the modified standard; are technically, economically,

environmentally, socially and legally feasible and practical and minimize or offset those adverse impacts listed in guideline 1.7 and in the guideline at issue.

Response: Acknowledged.

Guideline 1.9 Uses shall to the maximum extent practicable be designed and carried out to permit multiple concurrent uses which are appropriate for the location and to avoid unnecessary conflicts with other uses of the vicinity.

Response: Generally, the project area would only be unavailable for use during construction activities. The project area would again be available for multiple uses following actual construction operations. Natural waterways would not be closed.

Guideline 1.10 These guidelines are not intended to be, nor shall they be, interpreted to allow expansion of governmental authority beyond that established by La. R.S. 49:213.1 through 213.21, as amended; nor shall these guidelines be interpreted so as to require permits for specific uses legally commenced or established prior to the effective date of the coastal use permit program nor to normal maintenance or repair of such uses.

Response: Acknowledged.

2. GUIDELINES FOR LEVEES

Guideline 2.1 The leveeing of unmodified or biologically productive wetlands shall be avoided to the maximum extent practicable.

Response: The proposed action would not involve the construction of levees. However, non-structural measures include construction of berms which could be subject to these guidelines. The use of berms that could be considered leveeing unmodified or biologically productive wetlands has been avoided to the maximum extent practicable.

Guideline 2.2 Levees shall be planned and sited to avoid segmentation of wetland areas and systems to the maximum extent practicable.

Response: The proposed action would not involve the construction of levees. However, non-structural measures include construction of berms which could be subject to these guidelines. Proposed berms have been planned and sited to avoid segmentation of wetland areas and systems to the maximum extent practicable.

Guideline 2.3 Levees constructed for the purpose of developing or otherwise changing the use of a wetland area shall be avoided to the maximum extent practicable.

Response: The proposed action would not involve the construction of levees. However, non-structural measures include construction of berms which could be subject to these guidelines. Proposed berms would not be constructed for the purpose of developing or otherwise changing the use of a wetland area.

Guideline 2.4 Hurricane and flood protection levees shall be located at the non wetland/wetland interface or landward to the maximum extent practicable.

Response: The proposed action would not involve the construction of levees. However, non-structural measures include construction of berms which could be subject to these guidelines.

Proposed berms would be located at the non- wetland/wetland interface or landward to the maximum extent practicable.

Guideline 2.5 Impoundment levees shall only be constructed in wetland areas as part of approved water or marsh management projects or to prevent release of pollutants.

Response: Acknowledged.

Guideline 2.6 Hurricane or flood protection levee systems shall be designed, built and thereafter operated and maintained utilizing best practical techniques to minimize disruptions of existing hydrologic patterns, and the interchange of water, beneficial nutrients and aquatic organisms between enclosed wetlands and those outside the levee system.

Response: The proposed action would not involve the construction of levees. However, non-structural measures include construction of berms which could be subject to these guidelines. Proposed berms would be designed, built and thereafter operated and maintained utilizing Best Management Practices to minimize disruptions of existing hydrologic patterns, and the interchange of water, beneficial nutrients and aquatic organisms between enclosed wetlands and those outside the levee system.

3. GUIDELINES FOR LINEAR FACILITIES

Guidelines 3.1 through 3.16: **Guideline 3.1 Linear use alignments shall be planned to avoid adverse impacts on areas of high biological productivity or irreplaceable resource areas.**

Response: Proposed small berms have been planned to avoid adverse impacts on areas of high biological productivity or irreplaceable resource areas.

Guideline 3.2 Linear facilities involving the use of dredging or filling shall be avoided in wetland and estuarine areas to the maximum extent practicable.

Response: If dredging or filling is determined to be necessary, this action would be avoided in wetland and estuarine areas to the maximum extent practicable, be of the minimum practical size and length and best management practices would be utilized.

Guideline 3.3 Linear facilities involving dredging shall be of the minimum practical size and length.

Response: Acknowledged**.**

Guideline 3.4 To the maximum extent practicable, pipelines shall be installed through the "push ditch" method and the ditch backfilled.

Response: Acknowledged**.**

Guideline 3.5 Existing corridors, rights of way, canals, and streams shall be utilized to the maximum extent practicable for linear facilities.

Response: Acknowledged**.**

Guideline 3.6 Linear facilities and alignments shall be, to the maximum extent practicable, designed and constructed to permit multiple uses consistent with the nature of the facility.

Response: While disruption to multiple uses of the project area may occur during construction, multiple uses of the area would return to ambient conditions following construction.

Guideline 3.7 Linear facilities involving dredging shall not traverse or adversely affect any barrier island.

Response: The proposed action does not involve dredging on or near any barrier islands.

Guideline 3.8 Linear facilities involving dredging shall not traverse beaches, tidal passes, protective reefs or other natural gulf shoreline unless no other alternative exists. If a beach, tidal pass, reef or other natural gulf shoreline must be traversed for a non navigation canal, they shall be restored at least to their natural condition immediately upon completion of construction. Tidal passes shall not be permanently widened or deepened except when necessary to conduct the use. The best available restoration techniques which improve the traversed area's ability to serve as a shoreline shall be used.

Response: The proposed action does not include dredging that would involve traversing beaches, tidal passes, protective reefs, or other natural gulf shorelines.

Guideline 3.9 Linear facilities shall be planned, designed, located and built using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands.

Response: Acknowledged.

Guideline 3.10 Linear facilities shall be planned, designed, and built using the best practical techniques to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm generated surges. Consideration shall be given to the use of locks in navigation canals and channels which connect more saline areas with fresher areas.

Response: Acknowledged.

Guideline 3.11 All non navigation canals, channels and ditches which connect more saline areas with fresher areas shall be plugged at all waterway crossings and at intervals between crossings in order to compartmentalize them. The plugs shall be properly maintained.

Response: The proposed action would not construct any channels or canals that would adversely affect salinity patterns.

Guideline 3.12 The multiple use of existing canals, directional drilling and other practical techniques shall be utilized to the maximum extent practicable to minimize the number and size of access canals, to minimize changes of natural systems and to minimize adverse impacts on natural areas and wildlife and fisheries habitat.

Response: Acknowledged.

Guideline 3.13 All pipelines shall be constructed in accordance with parts 191, 192, and 195 of Title 49 of the Code of Federal Regulations, as amended, and in conformance with the Commissioner of Conservation's Pipeline Safety Rules and Regulations and those safety requirements established by La. R. S. 45:408, whichever would require higher standards.

Response: Acknowledged.

Guideline 3.14 Areas dredged for linear facilities shall be backfilled or otherwise restored to the pre existing conditions upon cessation of use for navigation purposes to the maximum extent practicable.

Response: Acknowledged.

Guideline 3.15 The best practical techniques for site restoration and re-vegetation shall be utilized for all linear facilities.

Response: The best practical site restoration techniques as well as best management practices would be utilized for site restoration and re-vegetation following construction.

Guideline 3.16 Confined and dead end canals shall be avoided to the maximum extent practicable. Approved canals must be designed and constructed using the best practical techniques to avoid water stagnation and eutrophication.

Response: Acknowledged.

4. GUIDELINES FOR DREDGED MATERIAL DEPOSITION

Guideline 4.1 Spoil shall be deposited utilizing the best practical techniques to avoid disruption of water movement, flow, circulation and quality.

Response: Dredged material would be deposited utilizing the best practical techniques and best management practices to avoid disruption of water movement, flow, circulation and quality.

Guideline 4.2 Spoil shall be used beneficially to the maximum extent practicable to improve productivity or create new habitat, reduce or compensate for environmental damage done by dredging activities, or prevent environmental damage. Otherwise, existing spoil disposal

areas or upland disposal shall be utilized to the maximum extent practicable rather than creating new disposal areas.

Response: One of the purposes of the NER TSP is to utilize dredged material to improve productivity by creating new habitats. Best management practices would be utilized to avoid and minimize any potential for environmental damage done by dredging activities. Upland disposal is not anticipated.

Guideline 4.3 Spoil shall not be disposed of in a manner which could result in the impounding or draining of wetlands or the creation of development sites unless the spoil deposition is part of an approved levee or land surface alteration project.

Response: Impounding or draining of wetlands or the creation of development sites is not anticipated.

Guideline 4.4 Spoil shall not be disposed of on marsh, known oyster or clam reefs or in areas of submersed vegetation to the maximum extent practicable.

Response: Dredged material would not be disposed of on known oyster or clam reefs or in areas of submersed vegetation to the maximum extent practicable.

Guideline 4.5 Spoil shall not be disposed of in such a manner as to create a hindrance to navigation or fishing, or hinder timber growth.

Response: The proposed action would not create a hindrance to navigation or fishing, or hinder timber growth.

Guideline 4.6 Spoil disposal areas shall be designed and constructed and maintained using the best practical techniques to retain the spoil at the site, reduce turbidity, and reduce shoreline erosion when appropriate.

Response: Best management practices would be employed to retain dredged material and minimize turbidity resulting from dredging activities.

Guideline 4.7 The alienation of state owned property shall not result from spoil deposition activities without the consent of the Department of Natural Resources.

Response: The proposed action would not result in the alienation of state owned property.

5. GUIDELINES FOR SHORELINE MODIFICATION

Guideline 5.1 Non structural methods of shoreline protection shall be utilized to the maximum extent practicable.

Response: Non structural methods of shoreline protection shall be utilized to the maximum extent practicable.

Guideline 5.2 Shoreline modification structures shall be designed and built using best practical techniques to minimize adverse environmental impacts.

Response: Shoreline protection structures would be designed and built using best practical techniques to minimize adverse environmental impacts.

Guideline 5.3 Shoreline modification structures shall be lighted or marked in accordance with U.S. Coast Guard regulations, not interfere with navigation, and should foster fishing, other recreational opportunities, and public access.

Response: There are no shoreline modification structures which would require lighting or marking in accordance with U.S. Coast Guard regulations. The proposed shoreline modification features would not interfere with navigation, and would foster fishing, other recreational opportunities, and public access to the maximum extent practicable.

Guideline 5.4 Shoreline modification structures shall be built using best practical materials and techniques to avoid the introduction of pollutants and toxic substances into coastal waters.

Response: Shoreline modification structures would be built using best practical materials and techniques to avoid the introduction of pollutants and toxic substances into coastal waters.

Guideline 5.5 Piers and docks and other harbor structures shall be designed and built using best practical techniques to avoid obstruction of water circulation.

Response: The Recommend Plan does not propose any piers, docks or other harbor structures.

Guideline 5.6 Marinas, and similar commercial and recreational developments shall to the maximum extent practicable not be located so as to result in adverse impacts on open productive oyster beds, or submersed grass beds.

Response: The Recommend Plan does not propose any marinas, or similar commercial or recreational developments.

Guideline 5.7 Neglected or abandoned shoreline modification structures, piers, docks, mooring and other harbor structures shall be removed at the owner's expense, when appropriate.

Response: Neglected or abandoned shoreline modification structures, piers, docks, mooring and other harbor structures would be removed at the owner's expense, when appropriate.

Guideline 5.8 Shoreline stabilization structures shall not be built for the purpose of creating fill areas for development unless part of an approved surface alteration use.

Response: Shoreline stabilization structures would not be built for the purpose of creating fill areas for development.

Guideline 5.9 Jetties, groins, breakwaters and similar structures shall be planned, designed and constructed so as to avoid to the maximum extent practicable downstream land loss and erosion.

Response: There are no plans for jetties, groins, or similar structures. However, there are three Gulf shore protection/stabilization features for Gulf shore protection/stabilization. 1.) Gulf shore protection/stabilization from Calcasieu River to Freshwater Bayou is 11.1 miles of Gulf shore protection consisting of a reef breakwater with a lightweight aggregate core; located approximately 150 feet offshore consisting of geotextile fabric and stone built to an 18-foot crest width. 2.) Gulf shore protection/stabilization from Calcasieu River to Freshwater Bayou is 8.1 miles of Gulf shoreline protection consisting of a reef breakwater with a lightweight aggregate core; located approximately 150 feet offshore using geotextile fabric and stone built to an 18-foot crest width. 3.) Gulf shore protection/stabilization from Calcasieu River to Freshwater Bayou is 7.2 miles of Gulf shoreline protection consisting of a reef breakwater with a lightweight aggregate core; located approximately150 feet offshore using geotextile fabric and stone built to an 18-foot crest width. These Gulf shore protection/stabilization features would be planned, designed and constructed so as to avoid to the maximum extent practicable downstream land loss and erosion.

6. GUIDELINES FOR SURFACE ALTERATIONS

Guideline 6.1 Industrial, commercial, urban, residential, and recreational uses are necessary to provide adequate economic growth and development. To this end, such uses will be encouraged in those areas of the coastal zone that are suitable for development. Those uses shall be consistent with the other guidelines and shall, to the maximum extent practicable, take place only:

- **a) on lands five feet or more above sea level or within fast lands; or**
- **b) on lands which have foundation conditions sufficiently stable to support the use, and where flood and storm hazards are minimal or where protection from these hazards can be reasonably well achieved, and where the public safety would not be unreasonably endangered; and**
  - **1) the land is already in high intensity of development use, or**
  - **2) there is adequate supporting infrastructure, or**
  - **3) the vicinity has a tradition of use for similar habitation or development**

Response: Proposed non-structural risk reduction features would include encouragement of industrial, commercial, urban, residential, and recreational uses which provide adequate economic growth and development. Those uses would be consistent with the other guidelines.

Guideline 6.2 Public and private works projects such as levees, drainage improvements, roads, airports, ports, and public utilities are necessary to protect and support needed development and shall be encouraged. Such projects shall, to the maximum extent practicable, take place only when:

a) they protect or serve those areas suitable for development pursuant to Guideline 6.1; and

b) they are consistent with the other guidelines; and c) they are consistent with all relevant adopted state, local and regional plans.

Response: Non-structural risk reduction features are necessary to protect and support needed development and shall, to the maximum extent practicable, take place only when they protect or serve those areas suitable for development pursuant to Guideline 6.1; and are consistent with the other guidelines; and are consistent with all relevant adopted state, local and regional plans.

Guideline 6.3 BLANK (Deleted by Louisiana Department of Natural Resources)

Guideline 6.4 To the maximum extent practicable wetland areas shall not be drained or filled. Any approved drain or fill project shall be designed and constructed using best practical techniques to minimize present and future property damage and adverse environmental impacts.

Response: To the maximum extent practicable wetland areas shall not be drained. However marsh restoration, utilizing fill material would be designed and constructed using best practical techniques to minimize present and future property damage and adverse environmental impacts.

Guideline 6.5 Coastal water dependent uses shall be given special consideration in permitting because of their reduced choice of alternatives.

Response: Acknowledged.

Guideline 6.6 Areas modified by surface alteration activities shall, to the maximum extent practicable, be re-vegetated, refilled, cleaned and restored to their predevelopment condition upon termination of the use.

Response: The proposed ecosystem restoration actions such as marsh creation would, to the maximum extent practicable, insure the restoration sites would revegetate.

Guideline 6.7 Site clearing shall to the maximum extent practicable be limited to those areas immediately required for physical development.

Response: Site clearing, such as for non-structural berms, as well as restoration of cheniers and hydro/salinity features would, to the maximum extent practicable, be limited to those areas immediately required for physical development.

Guideline 6.8 Surface alterations shall, to the maximum extent practicable, be located away from critical wildlife areas and vegetation areas. Alterations in wildlife preserves and management areas shall be conducted in strict accord with the requirements of the wildlife management body.

Response: Restoration features requiring surface alterations necessarily are located near critical wildlife areas and vegetation areas. However, any alterations in wildlife refuges/preserves or management areas would be conducted in strict accord with the requirements of the wildlife management body.

Guideline 6.9 Surface alterations which have high adverse impacts on natural functions shall not occur, to the maximum extent practicable, on barrier islands and beaches, isolated cheniers, isolated natural ridges or levees,' or in wildlife and aquatic species breeding or spawning areas, or in important migratory routes.

Response: It is not anticipated that any NED or NER features would adversely impact natural functions. However, proposed restoration features would restore/protect barrier shorelines, beaches, cheniers, wildlife and aquatic species breeding or spawning areas, or in important migratory routes.

Guideline 6.10 The creation of low dissolved oxygen conditions in the water or traps for heavy metals shall be avoided to the maximum extent practicable.

Response: The creation of low dissolved oxygen conditions would be avoided to the maximum extent practicable.

Guideline 6.11 Surface mining and shell dredging shall be carried out utilizing the best practical techniques to minimize adverse environmental impacts.

Response: There is no surface mining or shell dredging anticipated.

Guideline 6.12 The creation of underwater obstructions which adversely affect fishing or navigation shall be avoided to the maximum extent practicable.

Response: The creation of underwater obstructions, such as construction of breakwaters, would be constructed such that adverse affects on fishing and/or navigation would be avoided to the maximum extent practicable.

Guideline 6.13 Surface alteration sites and facilities shall be designed, constructed, and operated using the best practical techniques to prevent the release of pollutants or toxic substances into the environment and minimize other adverse impacts.

Response: Surface alteration sites and facilities would be designed, constructed, and operated using the best practical techniques and best management practices to prevent the release of pollutants or toxic substances into the environment and minimize other adverse impacts.

Guideline 6.14 To the maximum extent practicable only material that is free of contaminants and compatible with the environmental setting shall be used as fill.

Response: To the maximum extent practicable only material that is free of contaminants and compatible with the environmental setting shall be used as fill.

7. GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS:

Guideline 7.1 The controlled diversion of sediment laden waters to initiate new cycles of marsh building and sediment nourishment shall be encouraged and utilized whenever such diversion would enhance the viability and productivity of the outfall area. Such diversions shall incorporate a

plan for monitoring and reduction and/or amelioration of the effects of pollutants present in the freshwater source.

Response: The restoration features do not contain any diversions of freshwater or sediments.

Guideline 7.2 Sediment deposition systems may be used to offset land loss, to create or restore wetland areas or enhance building characteristics of a development site. Such systems shall only be utilized as part of an approved plan. Sediment from these systems shall only be discharged in the area that the proposed use is to be accomplished.

Response: The hydro/salinity measures would be constructed and operated to encourage marsh building and sediment and to offset land loss, to create or restore wetland areas.

Guideline 7.3 Undesirable deposition of sediments in sensitive habitat or navigation areas shall be avoided through the use of the best preventive techniques.

Response: Undesirable deposition of sediments in sensitive habitat or navigation areas would be avoided through the use of the best preventive techniques and best management.

Guideline 7.4 The diversion of freshwater through siphons and controlled conduits and channels, and overland flow to offset saltwater intrusion and to introduce nutrients into wetlands shall be encouraged and utilized whenever such diversion will enhance the viability and productivity of the outfall area. Such diversions shall incorporate a plan for monitoring and reduction and/or amelioration of the effects of pollutants present in the freshwater source.

Response: The proposed action does not include such diversions.

Guideline 7.5 Water or marsh management plans shall result in an overall benefit to the productivity of the area.

Response: Marsh restoration features would result in benefits to the productivity of the area.

Guideline 7.6 Water control structures shall be assessed separately based on their individual merits and impacts and in relation to their overall water or marsh management plan of which they are a part.

Response: Following more detailed design in subsequent NEPA documents, hydro/salinity structures would shall be assessed separately based on their individual merits and impacts and in relation to their overall water or marsh management plan of which they are a part.

Guideline 7.7 Weirs and similar water control structures shall be designed and built using the best practical techniques to prevent "cut arounds," permit tidal exchange in tidal areas, and minimize obstruction of the migration of aquatic organisms.

Response: Hydro/salinity structures would be designed and built using the best practical techniques to prevent "cut arounds," permit tidal exchange in tidal areas, and minimize obstruction of the migration of aquatic organisms.

Guideline 7.8 Impoundments which prevent normal tidal exchange and/or the migration of aquatic organisms shall not be constructed in brackish and saline areas to the maximum extent practicable.

Response: There would be no impoundments which prevent normal tidal exchange and/or the migration of aquatic organisms.

Guideline 7.9 Withdrawal of surface and ground water shall not result in saltwater intrusion or land subsidence to the maximum extent practicable.

Response: There would be no withdrawal of surface and ground waters.

8. GUIDELINES FOR DISPOSAL OF WASTES:

   Response: The proposed action would not involve the disposal of wastes and, therefore, these guidelines are not applicable.

9. GUIDELINES FOR USES THAT RESULT IN THE ALTERATION OF WATERS DRAINING INTO COASTAL WATERS:

   Response: The proposed action would not involve the alteration of waters draining into coastal waters and, therefore, these guidelines are not applicable.

10. GUIDELINES FOR OIL, GAS, AND OTHER MINERAL ACTIVITIES:

    Response: The proposed action would not involve oil, gas, and other mineral activities and, therefore, these guidelines are not applicable.

OTHER STATE POLICIES INCORPORATED INTO THE PROGRAM

Section 213.8A of Act 361 directs the Secretary of Department of Transportation and Development (DOTD), in developing the Louisiana Coastal resources Program (LCRP), to include all applicable legal and management provisions that affect the coastal zone or are necessary to achieve the purposes of Act 361 or to implement the guidelines effectively. It states:

> *The Secretary shall develop the overall state coastal management program consisting of all applicable constitutional provisions, laws and regulations of this state which affect the coastal zone in accordance with the provisions of this Part and shall include within the program such other applicable constitutional or statutory provisions, or other regulatory or management programs or activities as may be necessary to achieve the purposes of this Part or necessary to implement the guidelines hereinafter set forth.*
>
> *The constitutional provisions and other statutory provisions, regulations, and management and regulatory programs incorporated into the LCRP are identified and described in Appendix 1. A description of how these other authorities are integrated into the LCRP and coordinated during program implementation is presented in Chapter IV. Since all of these policies are incorporated into the LCRP, Federal agencies must ensure that their proposed actions are consistent with these policies as well as the coastal use guidelines (CZMA, Section 307).*

CONSISTENCY DETERMINATION

The proposed action, would provide nonstructural hurricane and storm surge damage risk reduction measures as well as ecosystem restoration features in the 4,700 square mile study area located in Calcasieu, Cameron, and Vermilion Parishes in southwest Louisiana. Based on this evaluation of the proposed action to the Coastal Use Guidelines, the U. S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District, has determined that the proposed action is consistent, to the maximum extent practicable, with the State of Louisiana's Coastal Resources Program.

Questions regarding this determination should be addressed to Dr. William Klein Jr.; U.S. Army Corps of Engineers; Regional Planning and Environment Division South; New Orleans Environmental Branch; CEMVN-PDN-CEP; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Dr. Klein may be contacted at (504) 862-2540, if questions arise. Please review the enclosed documents and provide comments within 45 days of the date.

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO

SOUTHWEST COASTAL LOUISIANA
REVISED INTEGRATED DRAFT FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX A

Annex C

Louisiana State Department of Wildlife and Fisheries Scoping Letter

BOBBY JINDAL
GOVERNOR

State of Louisiana

ROBERT J. BARHAM
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF SECRETARY

14 April 2009

Ms. Sandra Stiles
U.S. Army Corps of Engineers, CEMVNPM–RS,
P.O. Box 60267,
New Orleans, LA 70160–0267,

RE: Notice of Intent to Prepare a Draft Environmental Impact Statement for the Southwest Coastal Louisiana Feasibility Study

Dear Ms. Stiles

The Louisiana Department of Wildlife and Fisheries is the state agency with responsibility for protecting and enhancing the wildlife and aquatic resources of the state and their dependent habitats. The department also manages over 240, 000 acres is in the southwest portion of the state through the Rockefeller, White Lake, State Wildlife, and Marsh Island refuges. As such, we urge the US Army Corps of Engineers (USACE) and the Office of Coastal Protection and Restoration (OCPR) to minimize enclosure of additional wetlands behind hurricane protection levees.

The EIS shall thoroughly consider and evaluate the potential impacts of hurricane protection features on existing and planned coastal restoration projects. Coordination is required with Louisiana Coastal Area (LCA) Program managers, Coastal Wetlands Planning, Protection and Restoration Act agencies, Coastal Impact Assistance Program (CIAP) representatives and others to insure that ongoing coastal restoration projects are not compromised by the hurricane protection features.

The EIS shall undertake a comprehensive alternatives analysis. Before identifying a preferred hurricane protection alternative the alternatives analysis should evaluate and consider direct and indirect wetland impacts and impacts to rare, threatened and endangered species, natural communities, colonial nesting waterbirds, publicly owned and/or managed lands, and authorized wetland mitigation banks.

The EIS shall develop a comprehensive mitigation plan designed to off-set all impacts to fish and wildlife resources. The mitigation plan shall be developed in coordination with, and be approved by, the resource and regulatory agencies.

LDWF staff attended public scoping meetings in Abbeville and Cameron regarding this project. The general public at those meetings expressed concern about storm drainage issues in the western coastal parishes, saltwater intrusion into the Mermentau basin, and the desire for hurricane protection levees in

P.O. BOX 98000 • BATON ROUGE, LOUISIANA 70898-9000 • PHONE (225) 765-2800
AN EQUAL OPPORTUNITY EMPLOYER

the areas surrounding western Vermilion Bay. We understand that the USACE and the OCPR have retained Dr. Ehab Meselhe to model hydrologic processes in these areas. This is a positive development as historical changes in hydrology in the region coupled with rising sea levels are the major environmental drivers in the system. We urge that the findings of these models be in such a form to be comprehensible to the general public so that the potential consequences of different courses of action are clearly defined. In addition, we urge that the environmental modeling include storm surge and exchange through Atchafalaya, and East and West Cote Blanche Bays to the east of Marsh Island. This is clearly an important physical driver in the Vermilion Bay system.

Further, we urge the USACE and the OCPR to include some consideration of logistical issues that arise with installation/construction of additional culverts, water control structures, gates, etc. We believe a regional approach to water management is the most productive way to reconcile all the needs of the residents of the area.

Thank you for the opportunity to comment on this project.

Sincerely,

J. Heather Warner-Finley
Research and Assessment Division

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO

SOUTHWEST COASTAL LOUISIANA
REVISED INTEGRATED DRAFT FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX A

Annex D

National Marine Fisheries Service Scoping / Planning Aid Letter

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

November 22, 2013 F/SER46/RS:jk
225/389-0508

Colonel Richard L. Hansen
District Engineer, New Orleans District
Department of the Army, Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-2067

Dear Colonel Hansen:

NOAA's National Marine Fisheries Service (NMFS) is submitting this letter due to recent information provided by the U.S. Army Corps of Engineers' (USACE) Project Delivery Team (PDT) for the Southwest Coastal Louisiana (SWCLA) Feasibility Study, which has transitioned to the SMART (smart, measurable, attainable, risk-informed, and timely) planning process. Based on information provided in PDT meetings, NMFS is concerned insufficient information may be used to assess project effects and select alternatives, and the level of analysis for some measures may not be commensurate with the scale and scope of potential impacts. Some project measures under consideration have the possibility to directly affect wetland health, commercially and recreationally important fisheries resources and user groups, and essential fish habitat (EFH). The NMFS is providing this letter to identify potential concerns regarding sufficiency of the alternatives analysis and the assessment of potential environmental effects which may result from many of the alternatives currently under evaluation.

The study area covers over 4,700 square miles in Louisiana's Chenier plain and encompasses Cameron, Calcasieu, and Vermilion Parishes. The study area includes a wide variety of fishery habitat types ranging from saline to fresh marsh and open water. The study goals are extremely broad in scope, including both National Economic Development (NED) and National Environmental Restoration (NER) objectives. Specific study objectives are to: (1) provide hurricane and storm damage risk reduction, (2) reduce flooding induced by storm surge, and (3) provide ecosystem restoration to achieve ecosystem sustainability. Ecosystem restoration objectives are further defined as: (1) manage tidal flows to improve drainage and prevent salinity from exceeding two parts per thousand (ppt) for fresh marsh and six ppt for intermediate marsh, (2) increase wetland productivity in fresh and intermediate marshes to maintain function by reducing the time water levels exceed marsh surfaces, (3) reduce shoreline erosion and stabilize canal banks to protect adjacent wetlands, and (4) restore critical geomorphologic features, such as marshes and cheniers to maintain their function as wildlife habitat and as protective barriers to inland areas.

To date, the identification, screening and analysis of potential NER measures has relied largely on outputs from predictive models previously developed in conjunction with the Louisiana State Master Plan (SMP). The outputs from the SMP models were used to: (1) screen potential NER measures for further analysis, (2) drive the formulation of alternative arrays, and (3) inform the upcoming selection of a tentatively selected plan (TSP). The SMP model outputs will be used to drive TSP formulation and more detailed future analysis of environmental effects of various measures. We are unaware of any plans by the USACE to utilize additional methods to evaluate the performance of project components prior to the selection of a TSP. Although the SMP model may prove to be a valuable tool for large-scale planning efforts, NMFS cautions the model has not been reviewed by independent scientists or certified by the USACE. It is our understanding the USACE's policies require the use of certified models for all planning studies to ensure the models are technically and theoretically sound, compliant with policy, computationally accurate, and based on reasonable assumptions. Planning models are defined as any models and analytical tools which are used to: (1) define water resources problems and opportunities, (2) formulate potential alternatives to address the problems and take advantage of the opportunities, (3) evaluate potential effects of alternatives, and (4) support decision making. To the contrary, we are unaware of supporting information which would indicate the SMP modeling framework reliably predicts short or long term changes in hydrology, habitat type, vegetative cover, and other information needed to complete a variety of other impact analyses. Therefore, NMFS recommends the USACE either independently assess and certify the SMP models or use a previously USACE certified model for the SWCLA study.

The study currently features seven project alternatives. Hydrology and salinity control measures are included in all but the "No Action Alternative". However, the USACE has not provided data supporting the assumption that hydrologic and salinity control measures are actually effective at reducing wetlands loss rates or are critical components of sustainable ecosystem restoration in the Chenier Plain. Contrarily, there are a large number of studies which demonstrate the installation and operation of water control structures associated with hydrologic and salinity control measures do adversely impact marine fishery productivity. Other studies of areas impacted by the installation of water control structures suggest such actions could also adversely impact wetland health and sustainability. Because such hydrologic control measures are combined with other components which may be more effective in providing ecosystem restoration, their inclusion in every future with project alternative could result in the selection of a TSP which may adversely impact marine fishery production and wetland sustainability while providing limited environmental benefits. The NMFS recommends the USACE conduct further detailed analyses of all hydrological and salinity control measures prior to finalization of the TSP. The analyses should assess site specific hydrology effects of proposed measures, as well as anticipated wetland responses to verify assessed project benefits.

Further, NMFS is concerned there is not sufficient data to fully assess many of the proposed measures. Based on information provided by the PDT, there does not appear to be adequate detail regarding design and future operation of the majority of the hydrologic and salinity control measures. The NMFS believes these measures, designed to affect thousands of acres of aquatic habitats, cannot be assessed for either environmental benefits or impacts without hydraulic and

hydrology information, such as current and future hydroperiod (timing, depth and duration of flooding), salinity, and velocity projections at water control structures. The NMFS recommends more in-depth hydrology and salinity modeling be used to evaluate the proposed structures' impacts on the environment.

The NMFS is also concerned potential environmental impacts may not be revealed through the proposed assessment methods. For example, the Wetland Value Assessment (WVA) model was developed to evaluate and compare relatively small scale coastal restoration projects, rather than support large scale civil works alternatives analyses and impact assessments. Therefore, we believe it is inappropriate to utilize WVA models to determine the effects of basin-wide salinity reductions and reduced water exchange on marine fishery production. Any reduction in fisheries production could have secondary socioeconomic effects, which are also not being quantified to assist in the selection of a TSP. We believe these concerns should be incorporated into the decision-making process regarding the selection of the TSP, as well as addressed in any environmental impact statement (EIS) for the SWCLA project.

Some measures potentially to be included in the TSP, such a flood protection levees and ridge construction on marsh, could result in the destruction of wetlands. While it is possible for some environmental restoration measures to serve as compensatory mitigation for adverse impacts, it does not obviate the need for an evaluation of less damaging alternatives required by the Clean Water Act. The mitigation sequence established by the Clean Water Act Section 404(b)(1) Guidelines states impacts must be avoided, then minimized to the maximum extent practicable prior to the consideration of compensatory mitigation. The SWCLA study, on its current path, does not evaluate potential less damaging alternatives as required by the Clean Water Act.

The NMFS believes these and other issues potentially affecting NOAA trust resources should be thoroughly evaluated prior to selection of the TSP. To be in compliance with the National Environmental Policy Act (NEPA), evaluations of direct, indirect and cumulative impacts would be necessary for incorporation into a draft EIS for the project. Lacking such information in an EIS, NMFS does not believe it would be possible to move TSP directly into Pre-construction Engineering and Design (PED) without additional NEPA evaluations.

We do note the NED and some NER measures (i.e., marsh creation and shoreline protection) may be adequately evaluated as envisioned in the current study plan. As such, it may be appropriate to split off such measures, potentially allowing for full environmental compliance to be achieved within the SMART study schedule and furthering those critical measures to PED. The USACE could then reserve the more complex hydrology and salinity control measures for additional analyses. Due to the scope and diversity of measures under consideration, a Programmatic EIS may also be an alternative means to further the study objectives in this important region, while providing opportunity for more detailed evaluations in the future.

NMFS has findings with the USACE New Orleans District (NOD) describing procedures for EFH consultation during the NOD's review of planning and operations activities subject to compliance with provisions of the Magnuson-Stevens Fishery Conservation and Management

Act and NEPA. Under those procedures, the NOD must produce documents containing: (1) a description of the proposed action, (2) an analysis of individual and cumulative effects on EFH, Federally managed fisheries, including major prey species, (3) the NOD's views regarding effects, and (4) proposed mitigation, if applicable. These documents constitute the basis of an EFH assessment. This finding indicates the document required pursuant to NEPA will incorporate all the necessary requirements of an EFH assessment. Based on information provided to us to-date, NMFS does not believe sufficient analyses will be included in an EIS to adequately fulfill the requirements of an EFH assessment.

There is a potential for various project components to impact other NOAA trust resources managed through our Protected Resources Division. As such, we suggest your staff initiate coordination with Mr. David Bernhart by electronic mail at David.Bernhart@noaa.gov or by telephone at (727) 824-5312.

We look forward to receiving your response regarding these concerns in an effort to proceed with completion of this important study effort. If you wish to discuss this project further or have questions concerning our recommendations, please contact Lisa Abernathy at (225) 389-0508, extension 209.

Sincerely,

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
NOD, Exnicios, Klein
FWS, Walther, Paille
EPA, Ettinger
LDWF, Balkum
LA DNR, Haydel
F/SER3, Bernhart
F/SER4, Dale, Rolfes
F/SER46, Swafford
Files

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

October 9, 2009 F/SER46/RH:jk
225/389-0508

Colonel Alvin B. Lee, Commander
New Orleans District
Department of the Army, Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

NOAA's National Marine Fisheries Service (NMFS) has received your letter dated September 29, 2009, stating the intent of the New Orleans District (NOD) to prepare an environmental impact statement (EIS) for the Southwest Coastal Louisiana Protection and Restoration Feasibility Study. The purpose of the study is to determine the feasibility of providing coastal protection and restoration measures to the parishes of Calcasieu, Cameron and Vermilion, and to recommend an implementation plan.

In your letter, you requested NMFS participate as a cooperating agency in the preparation of the EIS for this study. As per provisions of the National Environmental Policy Act, NMFS accepts the NOD's invitation to become a cooperating agency on the EIS for this project. It should be noted that, due to staffing and travel constraints, our participation in the preparation of the EIS for this project may be limited to our review and comment on the draft EIS, participation on teleconferences, and occasional travel to meetings and field inspections. NMFS staff are unable to take an active role in drafting sections of the EIS.

We appreciate your invitation to serve as a cooperating agency on the EIS for this project. Ms. Rachel Sweeney of our Baton Rouge office should be the point of contact for this effort as she has already been coordinating with NOD staff on project issues and alternatives.

Sincerely,

for Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Lafayette, Soileau
EPA, Ettinger
LA OCPR, Johnson
F/SER46, Swafford
F/SER4, Dale
Files

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

April 7, 2009 F/SER46/RH:jk
225/389-0508

Ms. Sandra Stiles
Environmental Planning and Compliance Branch
Planning, Programs, and Management Division
New Orleans District, Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

Dear Ms. Stiles:

NOAA's National Marine Fisheries Service (NMFS) has received the Public Scoping Announcement and the Notice of Intent to prepare a Draft Environmental Impact Statement (DEIS) for the **Southwest Coastal Louisiana Feasibility Study for Calcasieu, Cameron and Vermilion Parishes, Louisiana.** The Committee on Transportation and Infrastructure, U.S. House of Representatives, Resolution Docket 2747, Southwest Coastal Louisiana, LA authorized the Secretary of the Army to survey the coast of Louisiana in Cameron, Calcasieu and Vermilion Parishes in reference to the advisability of providing hurricane protection and storm damage reduction, including the feasibility of constructing an armored 12-ft high levee along the Gulf Intracoastal Waterway.

According to the document, alternatives being considered include multi-parish levee alignments, ring levees, ridges and breakwaters to provide multiple lines of defense. Coastal restoration measures, including creation of barrier islands, large-scale marsh creation, salinity control, and hydrologic restoration also are being considered. Non-structural measures to be evaluated include raising structures in-place, property buy-outs, relocating communities and hardening infrastructure.

NMFS understands the desires of the affected public for storm surge risk reduction and is supportive of many of the alternatives being evaluated under this study. NMFS recommends the DEIS include and evaluate potential project impacts to the below identified resources and issues. This should include alternatives to avoid, minimize, and mitigate environmental impacts.

Essential Fish Habitat
This study will evaluate and may propose actions in areas identified as essential fish habitat (EFH) for a variety of federally managed species (see attached table for species, life stages and subcategories of EFH). Detailed information on federally managed fisheries and their EFH is provided in the 2005 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council (GMFMC). The generic amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The DEIS should include an EFH Assessment that includes: (1) a description of the proposed action; (2) an analysis of the effects, including

cumulative effects of the action, on various categories of EFH, the managed species, and associated life history stage; (3) the federal agency's views regarding the effects of the action on EFH; and, (4) proposed mitigation. While some alternatives may include wetland restoration components, all adverse impacts to various categories of EFH should be identified in the DEIS and a mitigation plan should be developed to fully offset those impacts.

Marine Fishery Resources

Wetlands in the project area consist of fresh, intermediate, brackish, and saline marsh. In addition to being designated as EFH for the species identified in the attached table, these wetlands provide nursery, foraging, and predator refugia habitats that support numerous economically important marine fishery species such as spotted seatrout, sand seatrout, black drum, southern flounder, gulf menhaden, striped mullet, Atlantic croaker, and blue crab. Some of these species also serve as prey for other fish species managed under the Magnuson-Stevens Act by the GMFMC (e.g., mackerels, snappers, and groupers) and highly migratory species managed by NMFS (e.g., billfishes and sharks). The importance of fishery resources to the state of Louisiana and the national economy is shown by the fact that during 2007, 951,240 pounds of seafood was landed at Louisiana ports totaling $259 million dollars in dockside value[a]. To demonstrate the value of the project area to commercial seafood production, ports at Intracoastal City and Cameron placed fifth and seventh, respectively, in the quantity (pounds) of landings as compared to the rest of the nation. More than 85% of these commercial landings are related to the harvest of estuarine dependent species (i.e., species that depend on access to coastal marsh during one or more life stage). NMFS recommends the DEIS fully describe and quantify the value of marine fishery resources in the study area to Louisiana and the nation and the dependence of those resources on access to, and the continued health of, coastal wetlands.

Alternatives Analysis

Sufficient information should be provided in the DEIS to demonstrate compliance with the Clean Water Act Section 404 regulations in determining the least environmentally damaging practicable alternative to provide the authorized project purpose. That project purpose is hurricane protection and storm damage risk reduction. Under the project authority, hurricane protection, storm surge risk reduction, and restoration are to be identified as measures to achieve the project purpose. To that end, a fully informed alternatives analysis should be prepared before indentifying a tentatively selected plan. Such an analysis should include direct and indirect wetland, EFH, and fishery resource impacts; risk and reliability; borrow material sources; cost; and time to construct for all alternatives, including the fulfillment of requisite compensatory mitigation needs. Whether for storm protection or habitat restoration, sediment sources for construction are a limiting resource and therefore represent a programmatic challenge. As with the ongoing updated 100-year protection for the Greater New Orleans Hurricane and Storm Damage Risk Reduction System, NMFS encourages alternatives analyzed for this study fully consider avoiding all wetland impacts for mining fill material.

NMFS agrees that information developed for the Louisiana Coastal Protection and Restoration Project, Final Technical Report would be a starting point for this authority. However, we are concerned that Report did not include wetland restoration measures in this area for a similar

[a] http://www.st.nmfs.noaa.gov/st1/publications.html

project purpose. NMFS recommends the Corps of Engineers (COE) re-evaluate some of the assumptions that resulted in a determination that wetland restoration efforts provided no storm surge risk reduction benefits.

NMFS also is concerned that some levee alternatives could prohibit the identification of a cost-effective project that would meet the objectives of providing hurricane and storm surge protection to the most developed areas while maintaining a natural system in areas where such protection may be less warranted. Combining levee alignments and wetland restoration features that stretch across the study area could result in the identification and selection of a project that is so expensive that funding would be prohibitive. Therefore, NMFS believes an alternative that includes construction of ring levees only around large population centers or important infrastructure, combined with more critical wetland restoration activities, should be included in the list of alternatives for in-depth evaluation.

Secondary Impacts

NMFS is concerned with the potential magnitude of secondary, or indirect, impacts to tidal wetlands that could result from the proposed construction of levees and installation of water control structures. Extensive secondary impacts to wetlands and fishery productivity could occur from enclosing wetlands and from mining sediment for levee construction. Considering the potentially large amount of tidally influenced wetlands and water bodies which would be enclosed within levees for certain alternatives, and the value of those wetlands to Louisiana's recreational and commercial marine fishery harvest, this issue is of paramount importance. Construction of levees and water control structures can impede fishery access to critical nursery and foraging habitats and result in the impoundment or semi-impoundment of those wetlands. The DEIS should quantify the acres of all categories of EFH to be enclosed within the levees or behind structures for all alternatives evaluated. The DEIS also should identify means to minimize the adverse impacts of those actions. This includes designing water control structures and developing operational plans to maximize passage of marine fishery organisms. Structure designs and operational plans should be developed in coordination with the natural resource agencies prior to the completion of the DEIS and described in specific detail in the document.

Enclosing wetlands under potential alternatives could result in landscape level alterations of wetland hydrology. This includes ponding of water on the marsh surface and interruption of the frequency and duration of tidal exchange necessary to help maintain plant health. If sufficient cross-sectional area is not provided at all necessary locations within a leveed system, introduced water from rainfall, runoff drainage or from storm overtopping could take an excessive amount of time to drain, which would increase soil anoxia and decrease plant health. Additionally, levees and water control structures could block the flow of sediments, detritus, and nutrients, which are important for maintaining plant health and soil elevations in a subsiding environment, to wetlands both within and outside the impounded system. This would result in an increase in the loss of wetlands in the affected systems. The DEIS should identify and discuss these issues and identify measures for each alternative necessary to maintain the health of enclosed or adjacent wetlands. NMFS believes that an in-depth, comprehensive hydrologic model will have to be developed to adequately evaluate potential hydrologic impacts and the need for drainage pathways. The DEIS should discuss the need for hydrologic modeling to identify the locations

of necessary drainage sites and to quantify the cross-sectional area required to rapidly remove rainfall and storm waters from enclosed wetlands.

The DEIS should evaluate the indirect impacts from the creation of borrow sources. For example, this should include an assessment of impacts on the regional sedimentation processes, impacts on wave refraction/diffraction (if applicable), slope stability, and water quality. Particularly concerning to NMFS would be excavation of continuous borrow pits adjacent to levees. Such an alternative source for fill material would contribute substantially to landscape level alterations to hydrology and likely adversely impact marsh health. If the borrow pits were located outside of the levee, these features can become navigational and hydrologic pathways that could result in erosion of adjacent banklines. While plugs can be constructed in continuous borrow pits to keep this from occurring, such plugs usually are only temporary features in a subsiding and deteriorating environment. The DEIS should address this issue, identify the most likely sources of fill for levee construction, and discuss measures necessary to ensure borrow site locations don't result in adverse impacts to wetland hydrology and marsh health.

Mitigation

The DEIS should contain sufficient information to support a determination of compliance with the Clean Water Act (CWA) Section 404(b)(1) Guidelines. The potential that wetland restoration efforts could offset some or all of the adverse impacts to marsh should not preclude required sequencing to first avoid and then minimize impacts of the proposed action on wetlands. Mitigation requirements for proposed hurricane levee alignments that impact wetlands also should comply with Section 2036 of the Water Resources Development Act (WRDA) of 2007 which requires mitigation for water resources project to comply with the mitigation standards and policies established by the COE regulatory program. In the case of this project, mitigation assessed should be in compliance with the April 10, 2008, CWA Section 404 mitigation regulations, which were issued jointly by the COE and the Environmental Protection Agency. Of primary pertinence is the requirement that mitigation plans include 12 components: objectives, site selection (rationale), site protection instrument, baseline information, determination of credits, mitigation work plan, maintenance plan, performance standards, monitoring requirements, long-term management plan, adaptive management plan, and financial assurances. The need for compensatory mitigation should be recognized in the DEIS, including a discussion of mitigation, and a draft mitigation plan that fully complies with the CWA and WRDA 2007 should be described in the Mitigation section of the document.

In addition to this, wetland restoration and/or flood protection activities are underway under the Louisiana Coastal Protection and Restoration project; the Coastal Wetlands Planning, Protect and Restoration Act; the Louisiana Coastal Area Feasibility Study; the Coastal Protection and Restoration Authority Master Plan; and the Coastal Impact Assessment Program. Additionally, regional sediment management efforts are underway that this study should utilize and adhere to in terms of identifying sediment quantity and quality and priority of its use relative to other programs. The DEIS should identify and discuss all programs that are involved in wetland restoration and flood protection efforts. Furthermore, the COE should make every effort necessary to coordinate planning under this project with those other efforts to facilitate the

exchange of information and ensure that activities being undertaken do not compromise the efforts of each.

NMFS is committed to working cooperatively with the COE, the State and other natural resource agencies to facilitate planning on this effort. We appreciate the opportunity to provide these comments for consideration in preparing this DEIS.

Sincerely,

Miles Croom
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

c:
FWS, Lafayette
EPA, Dallas
LA DWF
LA DNR, Consistency
F/SER4
F/SER46, Swafford
Files

EFH Requirements for Species Managed by the Gulf of Mexico Fishery Management Council: Ecoregion 4, Mississippi River Delta (South Pass) to Freeport, Tx, that occur in the study area.

Species	Life Stage	System	EFH
Brown shrimp	larvae/postlarvae	M/E	<82 m; planktonic, sand/shell/soft bottom, SAV, emergent marsh, oyster reef
	juvenile	E	<18 m; SAV, sand/shell/soft bottom, SAV, emergent marsh, oyster reef
White shrimp	larvae/postlarvae	M/E	<82 m; soft bottom, emergent marsh
	juvenile	E	<30 m; soft bottom, emergent marsh
Gulf stone crab	eggs	E/M	<18 m; sand/shell/soft bottom
	larvae/postlarvae	E/M	<18 m; planktonic/oyster reefs, soft bottom
	juvenile	E	<18 m; sand/shell/soft bottom, oyster reef
Red drum	larvae/postlarvae	E	all estuaries planktonic, SAV; sand/shell/soft bottom, emergent marsh
	juvenile	E/M	GOM <5 m Vermilion Bay; all estuaries; SAV,; and/shell/soft/hard bottom, emergent marsh
	adults	E/M	GOM 1-46 m; Vermilion Bay; all estuaries; SAV; sand/shell/soft/hard bottom, emergent marsh
lane snapper	larvae	E/M	4-132 m; reefs; SAV
	juvenile	E/M	<20 m; SAV; mangrove; reefs; sand/shell/soft bottom
bonnethead shark	juvenile/adult	M	inlets; estuaries; coastal waters <25 m; Louisiana to Texas

M=marine, E=estuarine

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO

SOUTHWEST COASTAL LOUISIANA
REVISED INTEGRATED DRAFT FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX A

Annex E

Natural Resources Conservation Service Prime and

Unique Farmlands Coordination

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302

(318) 473-7751
Fax: (318) 473-7626

December 13, 2013

U.S. Army Corps of Engineers
Regional Planning and Environmental Division South
New Orleans Environmental Branch
CEMVN-PDC-CEC
Attn: Eric M. Williams
P.O. Box 60267
New Orleans, Louisiana 70160-0267

RE: Southwest Coastal Louisiana Study – Chenier Ridge Reforestation Project

Dear Mr. Williams:

I have reviewed the above referenced project for potential requirements of the Farmland Protection Policy Act (FPPA) and potential impact to Natural Resources Conservation Service projects in the immediate vicinity.

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

The project narrative and maps submitted with your request indicates that the proposed construction areas will not "irreversibly" impact prime farmland and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity.

For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location: http://websoilsurvey.nrcs.usda.gov/

Please direct all future correspondence to me at the address shown above.

Respectfully,

Kevin D. Norton
State Conservationist

ACTING FOR

Attachment

Helping People Help the Land

An Equal Opportunity Provider and Employer

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 11/22/2013	
Name of Project Southwest Coastal Louisiana Study		Federal Agency Involved US Army Corp of Engineers	
Proposed Land Use Chenier Ridge Reforestation		County and State Cameron and Vermilion Parishes, Louisiana	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 11-22-2013	Person Completing Form: M. Lindsey
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☐ NO ☑	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount of Farmland As Defined in FPPA Acres: %	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System	Date Land Evaluation Returned by NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	672.9	458.7	251.9	29.6
B. Total Acres To Be Converted Indirectly	0	0	0	0
C. Total Acres In Site	672.9	458.7	251.9	29.6
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)				
2. Perimeter In Non-urban Use	(10)				
3. Percent Of Site Being Farmed	(20)				
4. Protection Provided by State and Local Government	(20)				
5. Distance From Urban Built-up Area	(15)				
6. Distance To Urban Support Services	(15)				
7. Size Of Present Farm Unit Compared To Average	(10)				
8. Creation Of Non-farmable Farmland	(10)				
9. Availability Of Farm Support Services	(5)				
10. On-Farm Investments	(20)				
11. Effects Of Conversion On Farm Support Services	(10)				
12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form: Eric M. Williams — Date: 11/22/2013

(See instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: If the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 160 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO

From: Williams, Eric MVN
To: "Walters, Cheryl - NRCS, Alexandria, LA"
Subject: AD-1006, Prime and Unique Farmlands Evaluation - Southwest Coastal Louisiana Study, U.S. Army Corps of Engineers, New Orleans District (UNCLASSIFIED)
Date: Friday, November 22, 2013 3:56:00 PM
Attachments: SW Coastal Louisiana Study_AD-1006.pdf
SW Coastal_AD-1006_Chenier Ridge Project Description.pdf
Site_A.dbf
Site_A.prj
Site_A.sbn
Site_A.sbx
Site_A.shp
Site_A.shp.xml
Site_A.shx
Site_B.dbf
Site_B.prj
Site_B.sbn
Site_B.sbx
Site_B.shp
Site_B.shp.xml
Site_B.shx
Site_C.dbf
Site_C.prj
Site_C.sbn
Site_C.sbx
Site_C.shp
Site_C.shp.xml
Site_C.shx
Site_D.dbf
Site_D.prj
Site_D.sbn
Site_D.sbx
Site_D.shp
Site_D.shp.xml
Site_D.shx

Classification: UNCLASSIFIED
Caveats: NONE

Ms. Walters,

Please see the attached form AD-1006 and project description for the subject. The U.S. Army Corps of Engineers is preparing an EIS for the subject project and request that the NRCS provide an evaluation of the prime and unique farmlands for proposed chenier ridge reforestation in southwest Louisiana. The proposed reforestation would convert approximately 1,431 acres of existing chenier ridge from future agricultural or grazing use. Shape files are attached for use in the evaluation. If you have questions regarding the project, the attached form AD-1006, or the shape files, please do not hesitate to contact me at (504) 862-2862.

Please advise if use of email is acceptable, or if in the future we should transmit these requests via another method.

Eric M. Williams

RPEDS, South/CEMVN-PDN-NCR

504/862-2862

Fax: 504/862-2088

eric.m.williams@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 11/22/2013		
Name of Project Southwest Coastal Louisiana Study	Federal Agency Involved US Army Corp of Engineers		
Proposed Land Use Chenier Ridge Reforestation	County and State Cameron and Vermilion Parishes, Louisiana		
PART II *(To be completed by NRCS)*	Date Request Received By NRCS	Person Completing Form:	
Does the site contain Prime, Unique, Statewide or Local Important Farmland? YES ☐ NO ☐ *(If no, the FPPA does not apply - do not complete additional parts of this form)*		Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount of Farmland As Defined in FPPA Acres: %	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System	Date Land Evaluation Returned by NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
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12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160				
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or local site assessment)*	160				
TOTAL POINTS ***(Total of above 2 lines)***	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form: Eric M. Williams — Date: 11/22/2013

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

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Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

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INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

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Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Project Description for the Chenier Reforestation Measure of the National Environmental Restoration Component of the Southwest Coastal Louisiana Study

The proposed activity would consist of planting trees for the reforestation of chenier ridges along the southwest Louisiana coast:

- Original measures included all cheniers and elevated features identified by the *Cheniers and Natural Ridges Study* (Providence Engineering and Environmental Group LLC 2009).
- From these, east/west-oriented cheniers with elevations generally greater than +5 feet NAVD 88 (from LIDAR) were selected. The +5 feet NAVD 88 target elevation is considered a conservative minimum elevation that could sustain tree plantings for the duration of the study period given relative sea level rise, and is taken from Didier (2007) and other professional opinions. The selected cheniers included: Measure 510a - Blue Buck Ridge; Measure 510b - Hackberry Ridge; Measure 510d - Front Ridge; Measure 416 - Grand Chenier Ridge; Measure 509c - Bill Ridge; and Measure 509d - Cheniere Au Tigre.
- Within these measures, reforestation focused specifically on large, continuous, sparsely wooded tracts greater than 5 acres, excluding: areas below +5 feet NAVD 88; areas with residential or industrial development; and sand borrow pits.
- For purposes of the prime and unique farmlands evaluation and to more easily correspond with Form AD-1006, the measures have been grouped as sites A – D. All of the measures discussed are part of the proposed action, and shape files for each *Site* are provided:
    - **Site A**
        - Measure 510a – Blue Buck Ridge: Eight tracts totaling 524.4 acres were identified (from west to east: 16.2, 40.4, 45.6, 141.2, 18.2, 20.4, 202.8, and 39.6- acre tracts).
        - Measure 510b – Hackberry Ridge: Three tracts totaling 148.5 acres were identified (from west to east: 62.7, 72.2, and 13.6-acre tracts). The western two miles (including the 62.7-acre tract) of this measure have been identified by the Louisiana Natural Heritage Program as "Remnant Chenier Forest", but appear to have been damaged by recent hurricanes.
    - **Site B**
        - Measure 510d – Front Ridge: The eastern 3.1 miles of this measure do not encompass large swaths of suitable elevation. Of the remainder, eleven tracts totaling 458.7 acres were identified (from west to east: 35.7, 47.1, 70.0, 125.6, 65.2, 12.3, 22.4, 15.0, 29.8, 13.0, 22.6-acre tracts).
    - **Site C**
        - Measure 416 – Grand Chenier Ridge: The eastern 5.8 miles of this measure do not encompass large swaths of suitable elevation. Of the remainder, nine tracts totaling 251.9 acres were identified (from west to east: 8.5, 11.0, 13.1, 19.4, 85.6, 46.7, 25.7, 29.1, and 12.8-acre tracts).

- **Site D**
  - Measure 509c – Bill Ridge: Three tracts were indentified that encompass 8.8 acres of the northern ridge, and 6.5 and 6.1 acres of the southern ridge. The middle section of the southern ridge was excluded due to insufficient elevation.
  - Measure 509d – Cheniere Au Tigre: The majority of this chenier is forested with the exception of an 8.2 acre tract on the western end. The eastern part of the measure along the Gulf shoreline was removed due to concerns about the sustainability of tree plantings in these exposed areas.

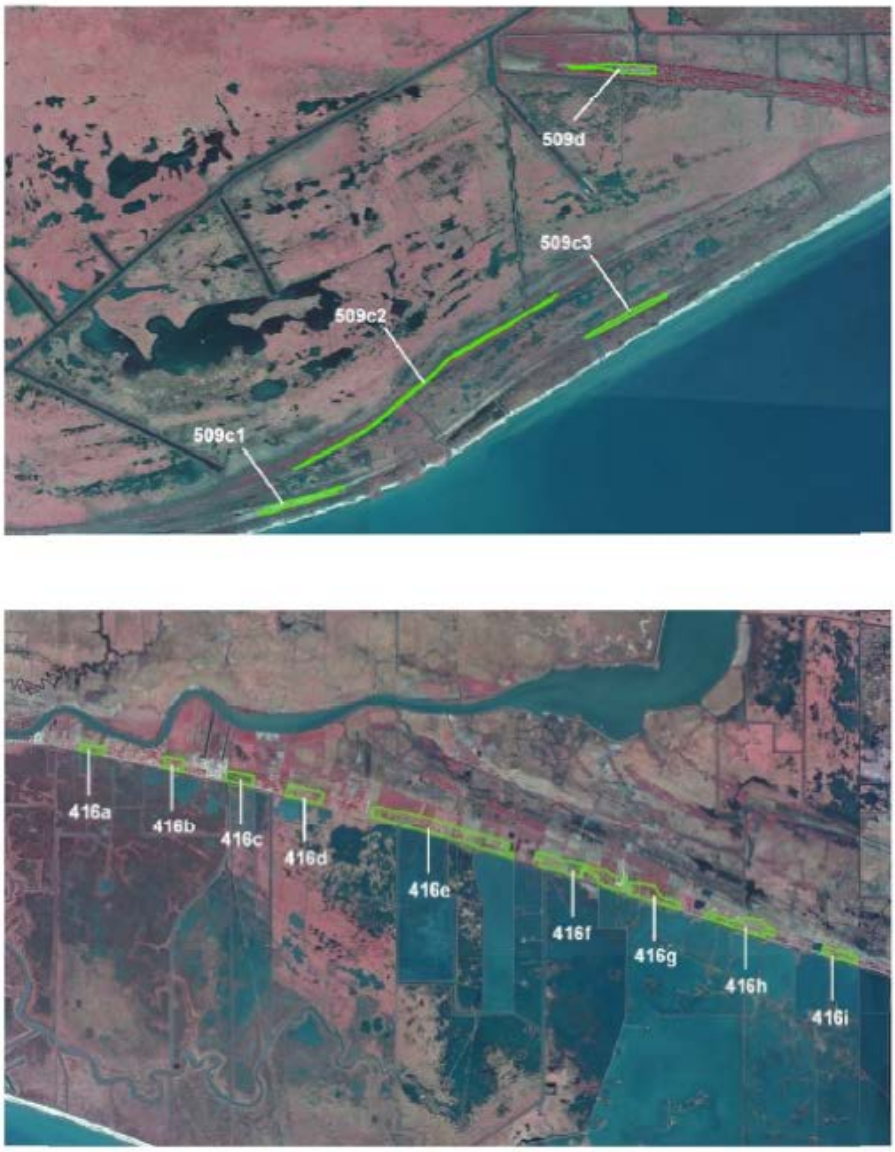

Figure 1. Selected reforestation tracts for Measures 509c, 509d, and 416.

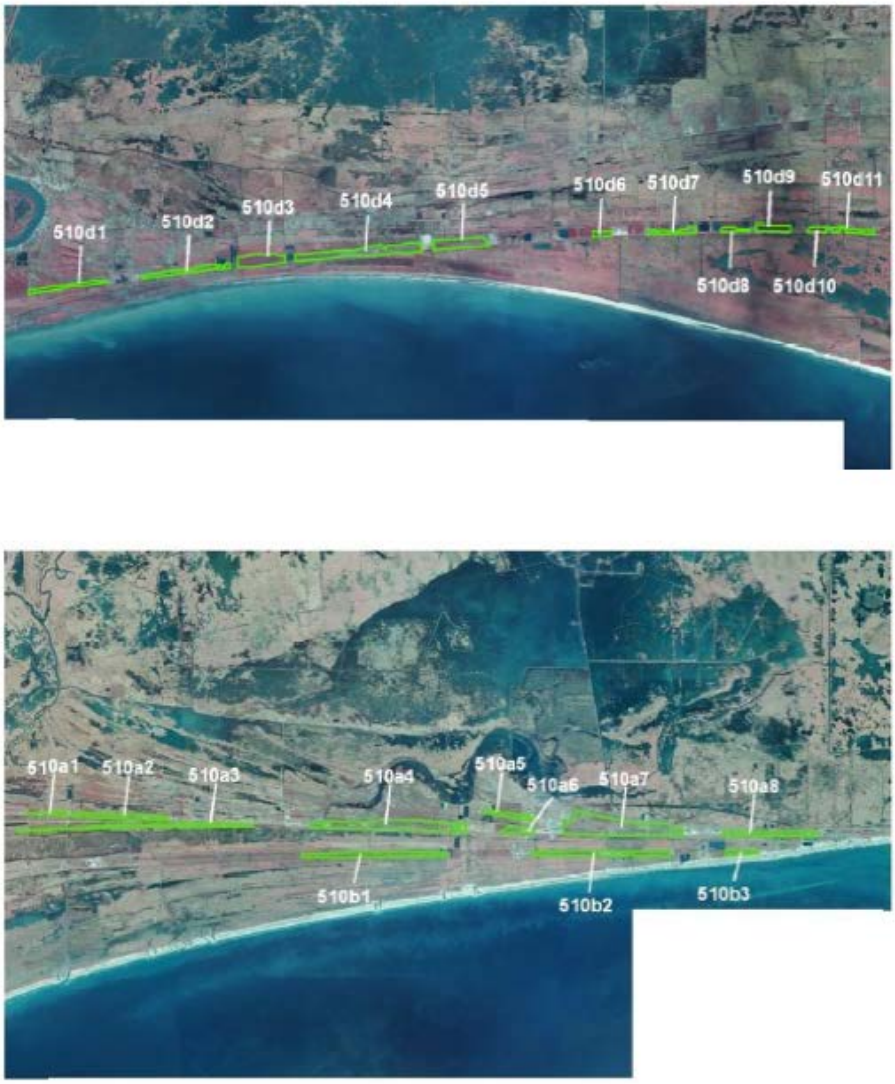

Figure 2. Selected reforestation tracts for Measures 510d, 510a, and 510b.

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REPLY TO

SOUTHWEST COASTAL LOUISIANA
REVISED INTEGRATED DRAFT FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX A

Annex F

State Historic Preservation Officer (SHPO) and

Tribal Coordination Letters

*****Note: these documents, associated analyses and coordination will be completed during the feasibility-level analysis phase of this study which would occur following release of the Draft Environmental Impact Statement, and would be included in the Final Environmental Impact Statement.